

SAINT SOPHIA  
IN  
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FOREWORD

SAINT SOPHIA IN ISTANBUL  
AN ARCHITECTURAL SURVEY

ROBERT L. VAN NICE

INSTALLMENT I

THE DUMBARTON OAKS CENTER FOR BYZANTINE STUDIES  
TRUSTEES FOR HARVARD UNIVERSITY  
WASHINGTON, D. C.

LC DOUBLE FOLIO

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1965

Installment 1

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## FOREWORD

SO seldom in the history of architecture has there appeared, seemingly without precedent, a monument of such remarkable scale and structural form as Justinian's Great Church of Saint Sophia that the origin of its conception and the means by which it was constructed within the limitations of experience and materials of its period pose problems of consuming interest. Rising at the southern end of the ancient acropolis of Byzantium, and dominating the modern city of Istanbul with the same authority which for centuries, following its dedication in A.D. 537, it held over mediaeval Constantinople, this extraordinary building comes to us with its initial impressiveness and color only slightly diminished either by the erosion of time or by its conversion to the rites of three different religions, and with its original form but little changed by partial reconstructions following disastrous earthquakes in the sixth, tenth, and fourteenth centuries.

The magnificence and arresting impact of Saint Sophia's incomparable nave continue to be celebrated throughout the world. Its central square, formed by immense piers and bounded along its sides at ground and gallery levels by straight colonnades, is elongated at its ends by curving colonnades of exedrae which join smaller piers arranged in half circles to flank an imperial entrance at the west and a semicircular apse at the east. Small half domes curve forward above the exedrae to intersect larger ones that develop inward to merge with enormous arches and pendentives culminating in a central dome lighted by a ring of forty windows; the entire envelope of this aspiring space being sumptuously decorated in its lower stages with splendid colored marbles and in its higher elements with brilliant gold mosaic.

Until early in the nineteenth century the form and character of decoration of the church were known only from mediaeval documents and from sketches and often misleading descriptions by travelers. The first opportunity for closer study of the structure fell to the brothers Gaspare and Giuseppe Fossati, Swiss-Italian architects, when in 1847 they were commissioned by Sultan Abdul Mecid to make a thorough restoration. Working with several hundred men for nearly two years, the Fossati carried out extensive structural consolidations in addition to refurbishing the interior and renewing stucco of the exterior. In the process of replacing lost marble revetments and mosaic with painted plaster, they laid bare many of the walls and thus were able to record the fine figural mosaics reported by earlier visitors while the building was serving as a mosque. Structural information resulting from this first extensive examination of the building was published, however, by Wilhelm Salzenberg, an architect whom the King of Prussia arranged to introduce while the Fossati scaffolds, reaching, as Salzenberg recounts, "to the highest point of the dome," were in place. His handsome engravings do indeed convey the scale and general form of elements of the fabric, as well as the character and quality of its decoration; but these conventional representations fail to record irregularities in sufficient detail to permit differentiation between those due, for example, to imprecision of the original construction and those that are deformations due to the action of forces at work in arched and spherical elements of the structure, or to define the nature and extent of reconstructions enabling the known history of the building to be interpreted in the light of its present condition.



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In 1936, William Emerson, at that time Dean of the School of Architecture at the Massachusetts Institute of Technology, traveled to Istanbul especially to view the exquisite mosaics then being recovered from beneath Fossati's plaster by Thomas Whittemore, founder of the Byzantine Institute. As an architect and educator deeply sensitive to the great achievements of his profession, Mr. Emerson immediately perceived that the secularization of the mosque, in the previous year, as a State Museum of the Turkish Republic, had created a long-awaited opportunity to advance our knowledge of this monument unique in the history of architectural development. Approaches made, with the assistance of Mr. Whittemore, to the Ministry of Education received favorable consideration, and permission was granted for the undertaking of an independent architectural investigation. In July 1937, Mr. Emerson returned to Istanbul in order to initiate the field work, which the author was privileged to carry out with his personal support and supervision until his death in 1957, and has continued since then under the sponsorship of Dumbarton Oaks. Intermittent periods of varying lengths, interrupted by a gap of five years during the Second World War and amounting in all to nearly eight years, have been spent in the investigation of the building.

Beginning with the limited aim of setting down details of a single one of Saint Sophia's four buttresses, the scope of the survey, as it became increasingly clear that by inspection and measurement alone — excavation was beyond the possibilities available — unsuspected amounts of invaluable and hitherto unknown internal evidence could be assembled, was progressively expanded until finally it encompassed the entire main structure as well as later accretions on its periphery. In sum, the study provides a framework and indispensable point of departure for examining any of the numerous architectural, structural, or historical questions connected with the more than fourteen hundred years of the building's continuous use.

This first Installment of plates presents, at small scale, general plans of the ground, gallery, and springing of the superstructure, plus two sections, and, at larger scale, detailed plans of the six critical levels through which the elements change as they rise to the cornice of the dome. In the plates are recorded not only the precise form and, where visible, details of elements in the fabric, but also evidence affecting the uses of its spaces, such as marks and cuttings in the floors, and positions of icons and ceremonial furniture; the extent of alterations and repairs revealed by patched areas within large stretches of uniform marble floor slabs with matched veinage; setting lines of the original builders; and even mason's marks. But with the working masonry of walls and vaults covered by revetments and mosaic, or painted plaster imitations, the exterior by stucco, and all roofs by sheets of lead, details of the actual fabric can be seen only narrowly through flaws in the decoration or occasionally when stucco has weathered away on the exterior. In the detailed plans, lacks of bond, though they may in fact be repetitive in a building essentially symmetrical, are indicated only in those few places where they have been observed. No attempt has been made to indicate changes in materials or dates of construction; the kinds of masonry employed and their chronology being reserved for demonstration in the second Installment and for discussion with supplementary illustrations in the text accompanying it.

All the drawings have been constructed by measurement from survey traverses laid out with an instrument at successive levels and related, for the most part, by plumb lines; further, wherever possible, details have been added, not in a studio elsewhere, but at the site itself. As



many of the 139 odd spaces dealt with are mutually inaccessible and some are penetrable only through well-like openings in their vaults, the accuracy of the outline of certain areas is not millimetrically correct. On the other hand, for all ordinary purposes the range of error is so slight as to be meaningless, and special features that required layout by more exact computation will be explained in the text. The aim of presenting a trustworthy record of the form and condition in which Saint Sophia reaches us in the twentieth century has, on the whole, been fulfilled with a precision satisfying every normal demand for scholarship.

In the course of each of the years through which the survey has extended there have arisen more obligations of both a personal and professional kind than can be suggested, let alone adequately acknowledged, in this preliminary statement. No mention of the work can ever be made without recognizing that had not Mr. Emerson acted upon his primary inspiration to take advantage of circumstances favoring such a study, it might not have been undertaken, and that he personally supported it for many years. Among his associates who played a major role in the inception of the work must be named Samuel Chamberlain and the late Seth T. Gano. A special debt is owed to Professor E. N. Gelotte, now emeritus, of the Massachusetts Institute of Technology, for his interest early in the project and for his advice which greatly aided in prosecuting the field work; to the late Karl von Terzaghi, of Harvard University, and to Professors Frederick G. Fassett, Jr. and Walter K. Voss, as well as to the late Professor Frederick K. Morris, of M. I. T., whose knowledge of collateral problems opened the way to exploiting possibilities inherent in the study which might otherwise have been ignored; also to Professor George H. Forsyth, Jr., of the University of Michigan, for, in addition to consulting over the years, proving, through his own work on St. Martin's at Anger, the truth of his observation that the study of a building can in itself be a work of art.

To Dumbarton Oaks it is a special pleasure to express appreciation of its great contribution, beginning with its invitation, extended in 1949, to use its facilities for the prosecution of the work. Without the constant interest and encouragement of John S. Thacher, Director of Dumbarton Oaks, and his provision of the most appropriate theodolite available for such work, the project might well not have attained the completeness it merited, and much of its success is due to his unfailing and inestimable assistance. The late Professor Albert M. Friend, Jr., former Director of Studies, recognized the importance of the study and was instrumental in arranging for its fuller realization. Professor Ernst Kitzinger, present Director of Studies, has given much time, thought, and guidance to the solution of problems encountered in bringing the work to completion. Professor Cyril Mango, now of the University of London, and Paul A. Underwood, Professor of Byzantine Art and Archaeology, have given freely of their knowledge of the building and its history as the work has progressed.

In Istanbul a continuing debt is owed to Feridun Dirimtekin, Director of Ayasofya Müzesi, for his sympathetic interest and helpfulness and in particular for the readiness with which he opened paths in whatever direction the investigation led, as did his predecessors Sami Boyar and the late Muzaffer Ramazanoglu. It would have been impossible, without help, to measure such vast areas in so large a building, and although all the students who in different years worked with the author during their vacation periods cannot be named, Mahmut Otüs, Yavuz Birtürk, Bülent Ezal, and Kaya Karamehmet can be singled out as representative of the energy, interest, and high competence they brought to the work. Members of the faculty and staff of Robert







## LIST OF PLATES

### *Frontispiece. SAINT SOPHIA, VIEW FROM THE SOUTH*

1. GENERAL PLAN AT GROUND LEVEL
2. GENERAL PLAN AT GALLERY LEVEL
3. GENERAL PLAN AT SPRINGINGS OF MAIN ARCHES AND SEMIDOMES
4. TRANSVERSE SECTION, LOOKING EAST
5. LONGITUDINAL SECTION, LOOKING SOUTH
- 6, 7, and 8. ELEVATIONS, *to be included in Second Installment of Publication\**
9. PLAN AT GROUND LEVEL, WESTERN AREAS: Nave, Side Aisles, Narthex, Exonarthex
10. PLAN AT GROUND LEVEL, CENTRAL AREAS: Nave, Side Aisles
11. PLAN AT GROUND LEVEL, EASTERN AREAS: Nave, Side Aisles, Apse
12. PLAN AT GROUND LEVEL, SOUTHEASTERN EXTERIOR AREAS
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24. PLAN AT LEVEL OF MAIN SEMIDOMES: WEST
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27. PLAN AT LEVEL OF BUTTRESS ROOFS; cutting through Pendentives and Dome Base
28. PLAN OF DOME AT CORNICE AND WINDOW LEVELS

\* The second and final installment of plates will comprise approximately the same number as the first. Consisting of both colotype and offset plates, it will provide detailed sections of major elements at the scale of 1:100 m., as well as elevations and isometric drawings. The present portfolio has been designed to accommodate these plates. It is planned to publish simultaneously with the second installment a text volume, which will include an exposition, by Cyril Mango, of historical events affecting the structure, a systematic description, by Robert L. Van Nice, of the building as it is today, including evidence of the changes it has undergone through the centuries, and an analysis, by Rowland J. Mainstone, of the structural system and the effects on the building of forces at work in it.







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DUMBARTON OAKS RESEARCH LIBRARY AND COLLECTION  
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## FOREWORD

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Every aspect of the preparation of final plates has prof-

ited from the initiative and experience of John F. Wilson, whose fine draftsmanship has been complemented by that of Robert T. Halpin. Miss Julia Warner has kindly arranged with experienced discrimination the typography and other features of the album. For the success with which extraordinarily large and detailed drawings have been successfully reproduced in collotype so that the information reads in tones related to the order of its importance, we owe a continuing debt to the patience and skill of Parker B. Allen, President, and Harold Hugo, Director, of The Meriden Gravure Company.

Finally, it is difficult to express adequately the debt owed to the late Robert Woods Bliss and to Mrs. Bliss for their deep interest in the Great Church and for their steadfast concern that it be published as Mr. Emerson envisaged it so many years ago.

Robert L. Van Nice  
Dumbarton Oaks  
November 1, 1965

#### *Addendum*

This second Installment of plates completes the architectural survey begun many years ago. Since the publication of the first part work continued at Saint Sophia in 1967, 1968, and 1969. On those occasions, as in the past, the late director Feridun Dirimtekin and the entire staff of Ayasofya Müzesi were unfailingly friendly and helpful. After the author left Istanbul, Professor C. L. Striker provided further information on details of the building.

At Dumbarton Oaks the drawing of the plans would have been impossible without the continual assistance of John Wilson; Philip Griffith, Padermys Malasastra, and Edward Fair also gave invaluable help. Howard Trevilian played a significant role in preparing analytic sections.

All the directors of Dumbarton Oaks have been involved with this undertaking—first John Thacher, then William Tyler, Giles Constable, and Robert Thomson. Without their interest and concern over nearly five decades, and the support of Ernst Kitzinger while he was director of studies, this survey would not have appeared. In the preparation of the second Installment a particularly

important role was played by Glenn Ruby, Publications Manager at Dumbarton Oaks.

As work on Saint Sophia progressed it seemed at different times that the publication might take different forms. The final result is a complete architectural survey without descriptive analysis. Essential information for an understanding of this unsurpassed monument of the Justinianic era may now be found within these covers, though the inadequacy of the most detailed plans to convey the grandeur of Saint Sophia remains as poignant as ever. In the archives of Dumbarton Oaks are stored the working notes, preliminary measurements, and photographs on which this survey is based.

A final word to acknowledge the patient support of my wife and family during long periods of absence devoted to the survey work and to recall the shared delights of two occasions of residence in Istanbul.

Robert L. Van Nice  
Dumbarton Oaks  
May 1, 1986



## LIST OF PLATES

### *Frontispiece.* SAINT SOPHIA, VIEW FROM THE SOUTH

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2. GENERAL PLAN AT GALLERY LEVEL
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4. TRANSVERSE SECTION, LOOKING EAST
5. LONGITUDINAL SECTION, LOOKING SOUTH
6. WEST ELEVATION
7. SOUTH ELEVATION: PROJECTING ELEMENTS SHOWN IN TRACE OUTLINE; Unbonded Breaks and Remains of Arches Projected from Interior
8. EAST ELEVATION
9. PLAN AT GROUND LEVEL, WESTERN AREAS: Nave, Side Aisles, Narthex, Exonarthex
10. PLAN AT GROUND LEVEL, CENTRAL AREAS: Nave, Side Aisles
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26. PLAN AT LEVEL OF MAIN SEMIDOMES: EAST
27. PLAN AT LEVEL OF BUTTRESS ROOFS; cutting through Pendentives and Dome Base
28. PLAN OF DOME AT CORNICE AND WINDOW LEVELS
29. TRANSVERSE SECTION, LOOKING EAST: Nave Floor to Dome Cornice
30. TRANSVERSE SECTION, LOOKING EAST: Higher Elements (Upper Parts of Gallery and Dome)
31. LONGITUDINAL SECTION, LOOKING SOUTH: Apse, East Semidome, and Main Piers (Nave Floor to Dome Cornice)
- 32A. LONGITUDINAL SECTION, LOOKING SOUTH: West Semidome and Narthexes (Nave Floor to Dome Cornice)
- 32B. CUTAWAY ISOMETRIC VIEW: Imperial Door, West Gallery, and West Window
33. LONGITUDINAL SECTION, LOOKING SOUTH: Higher Elements (Apse, East Semidome, and Main Dome)
- 34A. WEST SEMIDOME, SOUTH ELEVATION
- 34B. LONGITUDINAL SECTION, LOOKING SOUTH



35. TRANSVERSE SECTION, LOOKING SOUTH: Nave Floor to Dome Cornice
36. TRANSVERSE SECTION, LOOKING WEST: Higher Elements (Upper Parts of Gallery and Dome)
37. WEST ELEVATION: Gallery Roof to Dome
38. SOUTH ELEVATION: Higher Elements (Apse Shell, East Semidome, and Dome)
39. EAST ELEVATION: Higher Elements (Gallery Roof to Dome)
40. SECTIONS OF NARTHEX, VESTIBULES, AND PERIPHERAL CONSTRUCTIONS
41. VAULT SECTIONS: Eastern Half of South Aisle and Gallery
42. END WALLS OF BUTTRESSES (Minus Projecting Elements)
43. MAIN ARCHES, PENDENTIVES, SEMIDOMES, AND CENTRAL DOME: True Contours Superimposed on Longitudinal Section
44. TRACE PLANS SUPERIMPOSED; showing Relation of Elements at Successive Levels
45. EASTERN PIERS AND BUTTRESSES: Principal Sections
46. WESTERN PIERS AND BUTTRESSES: Principal Sections



12. Transverse Section, Looking South: Note Floor in Dome Center  
13. West Elevation: Gallery Back to Dome  
14. South Elevation: Higher Rooms (Apse Side, East End, and Dome)  
15. East Elevation: Higher Rooms (Gallery Back to Dome)  
16. Section of Narthex, Vestibule, and Peristyle Construction  
17. West Elevation: Room NW of South Aisle and Gallery  
18. End Wall of Narthex (Room Projecting Room) on West, Aisle with Vestibule  
19. Main Aisle: Vestibule, Peristyle, and Gallery (Room Projecting Room)  
20. Section of Narthex, Vestibule, and Peristyle Construction  
21. Trace Plan: Room Projecting Room (Room Projecting Room) on West, Aisle with Vestibule  
22. East Plan and Section: Projected Room (Room Projecting Room) on West, Aisle with Vestibule  
23. West Plan and Section: Projected Room (Room Projecting Room) on West, Aisle with Vestibule  
24. Section of Narthex, Vestibule, and Peristyle Construction  
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SAINT SOPHIA IN ISTANBUL  
AN ARCHITECTURAL SURVEY



# SAINT SOPHIA IN ISTANBUL

## AN ARCHITECTURAL SURVEY

ROBERT L. VAN NICE

THE DUMBARTON OAKS CENTER FOR BYZANTINE STUDIES  
TRUSTEES FOR HARVARD UNIVERSITY  
Washington, District of Columbia



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Meriden, Connecticut

Distributed by  
J. J. Augustin, Publisher  
Locust Valley, New York

Library of Congress Catalog Card No. 65-18219



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AN ARCHITECTURAL SURVEY

PLATES



SAINT SOPHIA



VIEW FROM THE SOUTHWEST



# SAINT SOPHIA

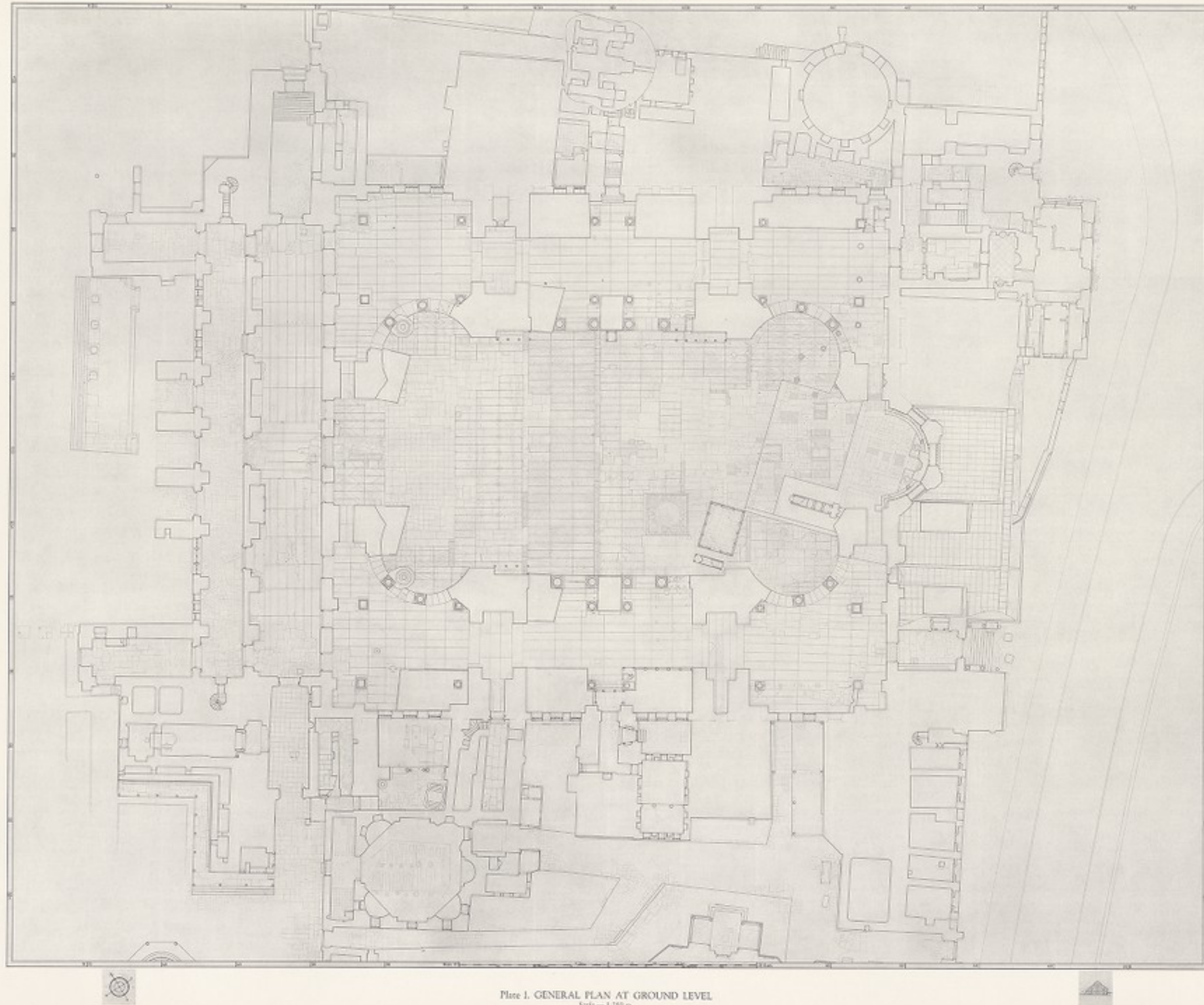


Plate I. GENERAL PLAN AT GROUND LEVEL  
Scale — 1:250 m



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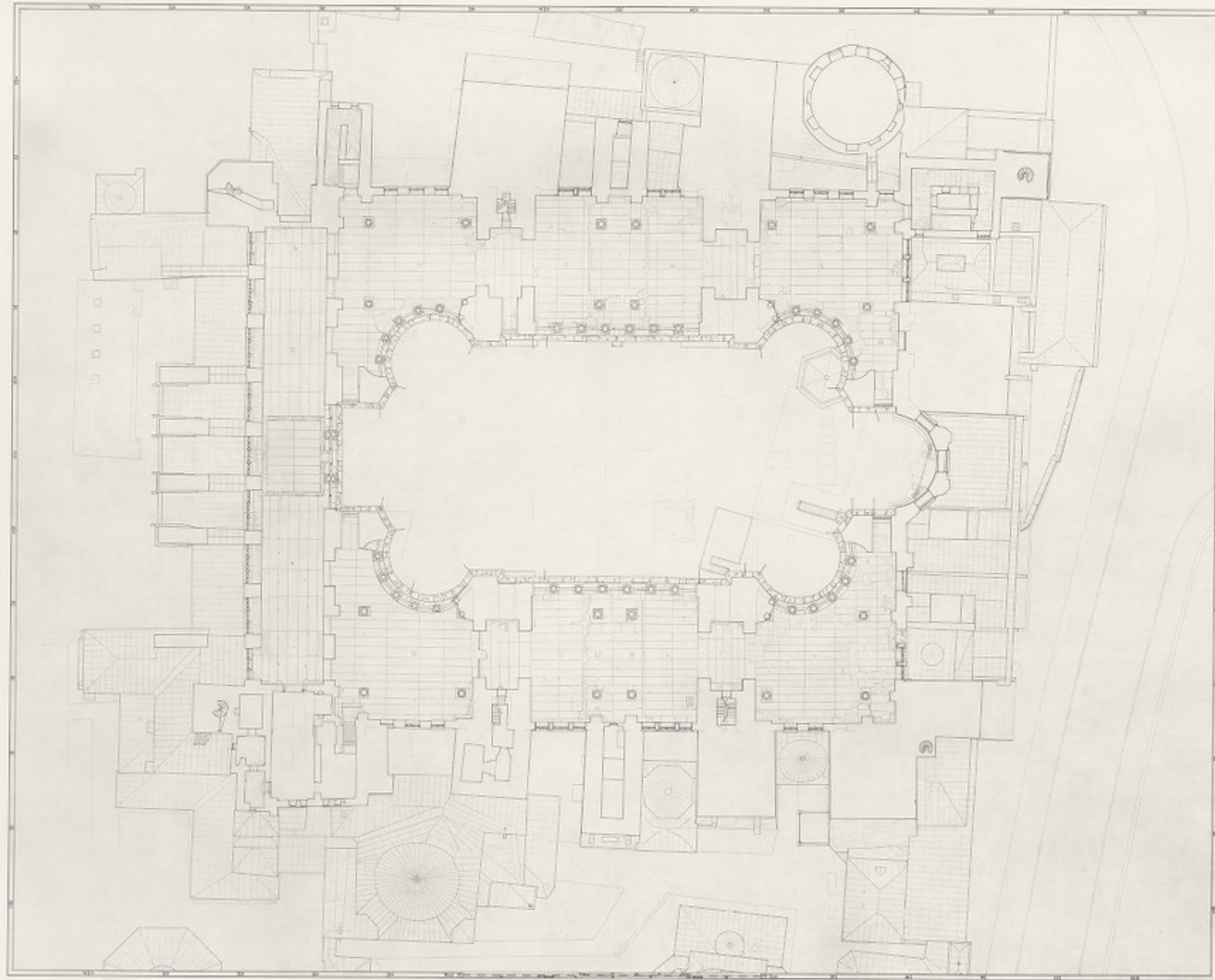


Plate 2. GENERAL PLAN AT GALLERY LEVEL  
Scale — 1/250 m.



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PL. 3

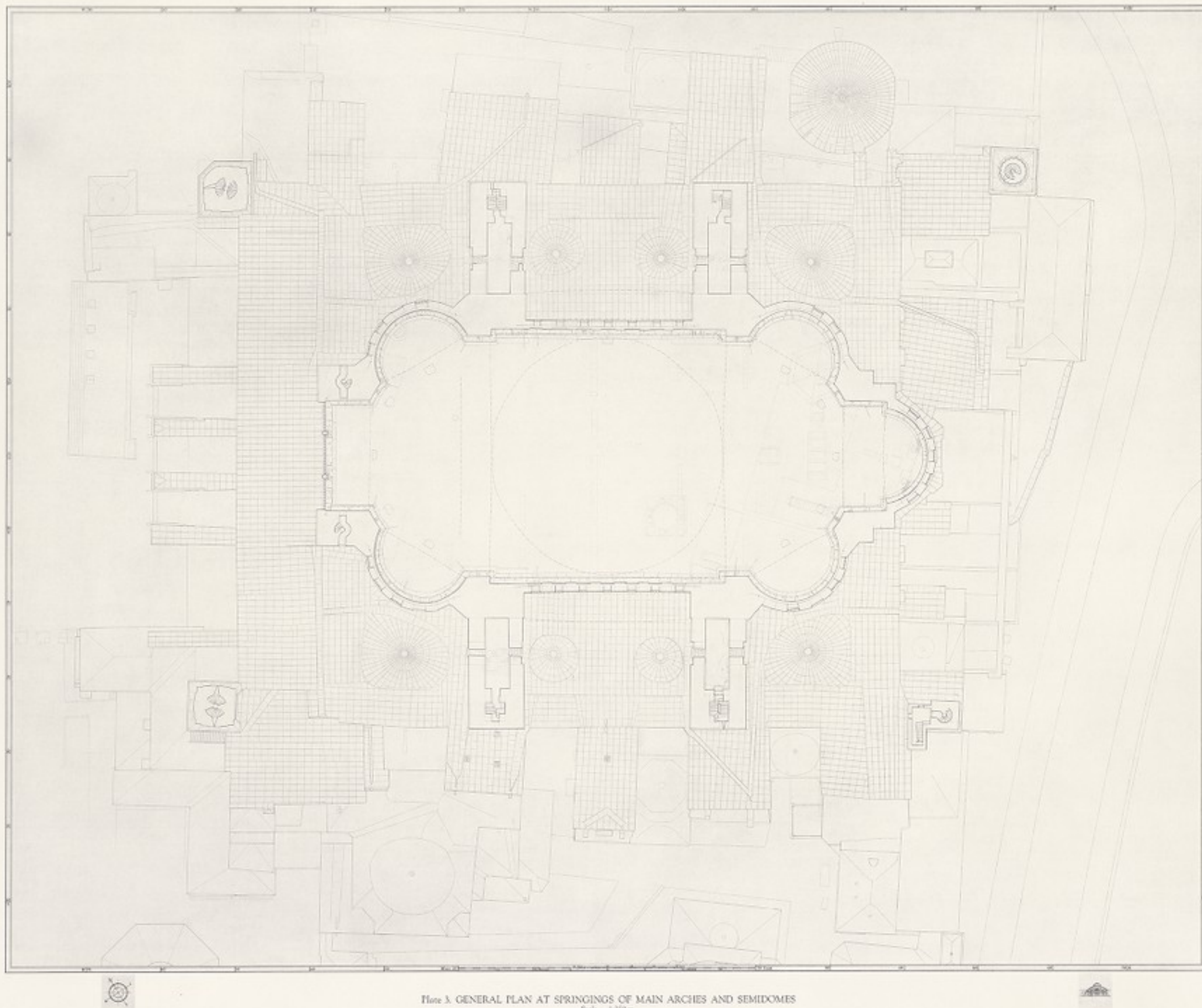


FIG. 3. GENERAL PLAN AT SPRINGINGS OF MAIN ARCHES AND SEMIDOMES  
Scale — 1:250 m.

PL. 3





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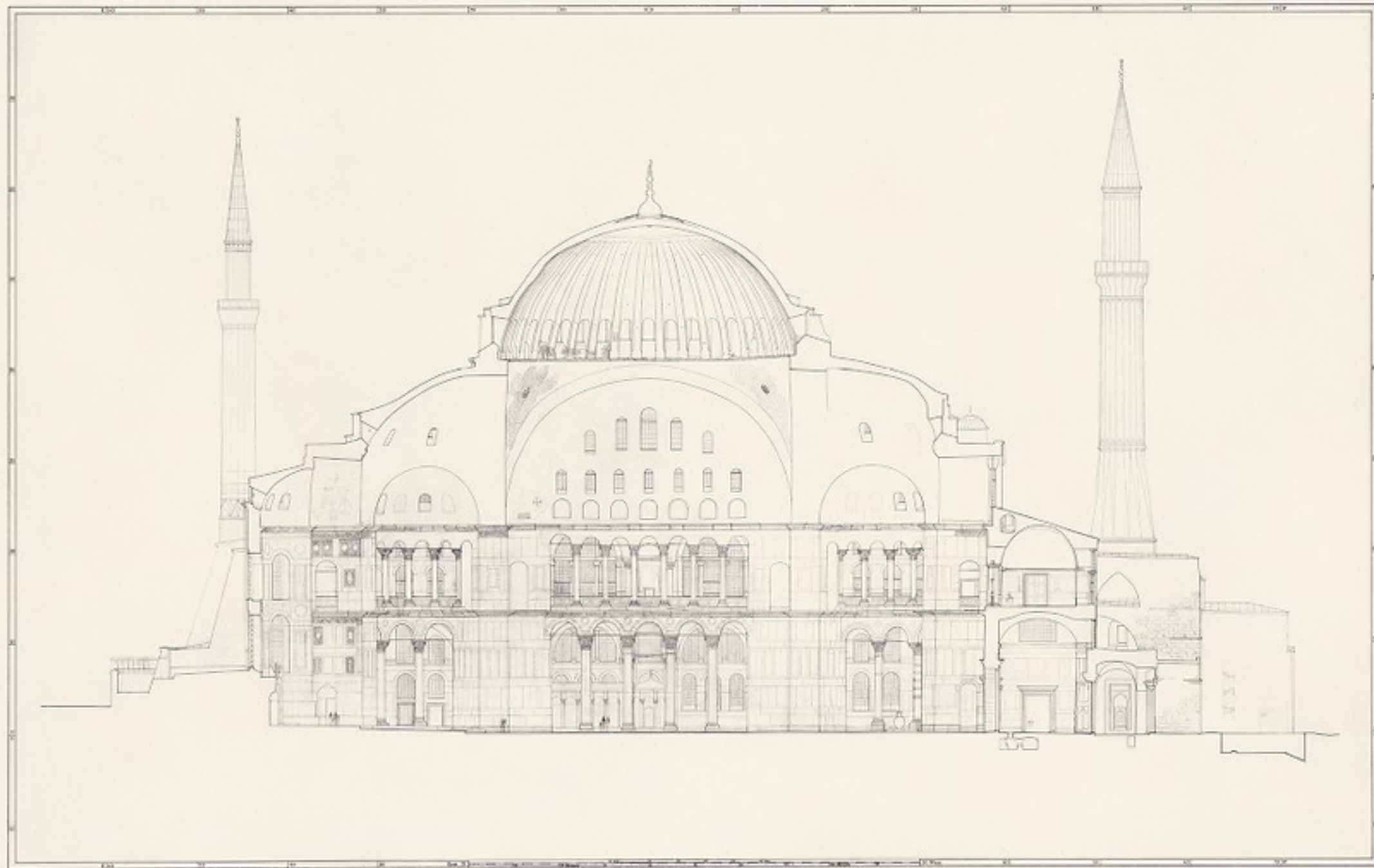


Plate 5. LONGITUDINAL SECTION, LOOKING SOUTH  
Scale — 1:250 m.

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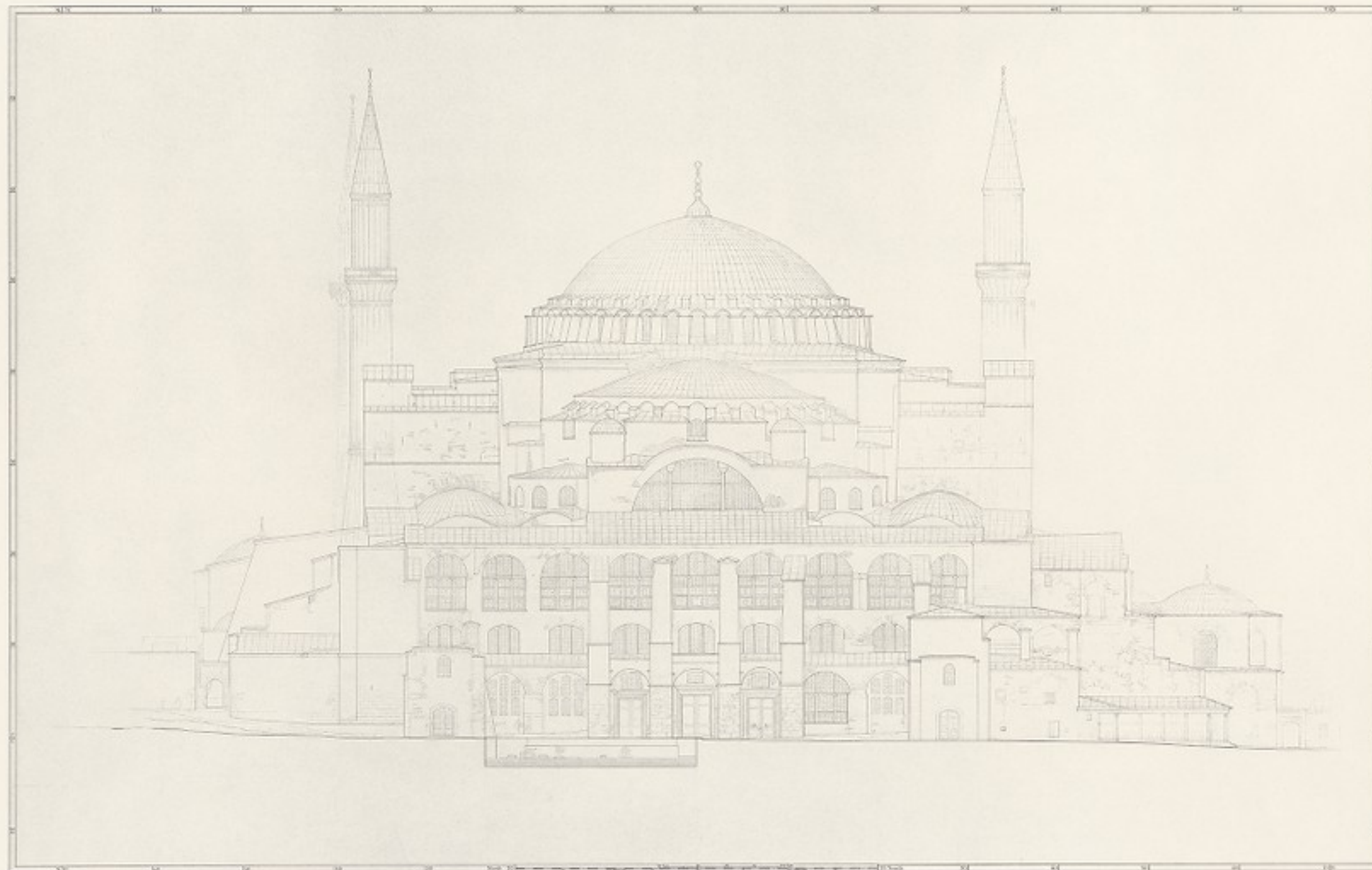


Plate 5. WEST ELEVATION  
Scale — 1:250 m.



# SAINT SOPHIA

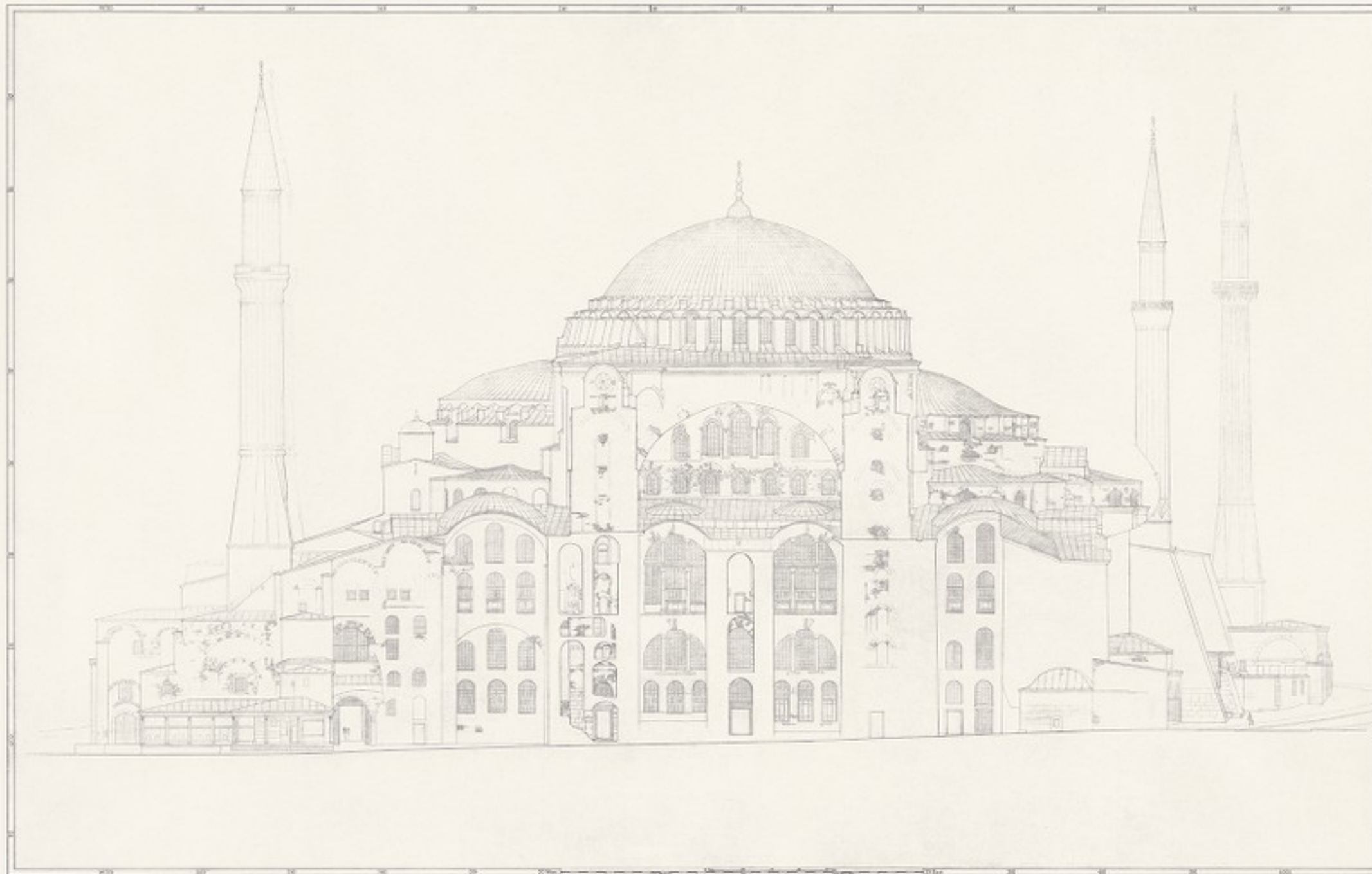


PLATE 7. SOUTH ELEVATION  
Projecting Elements Shown in Trace Outline; Unbeaded Breaks and Remains of Arches Projected from Interior  
Scale — 1:250 m.

## SAINT SOPHIA

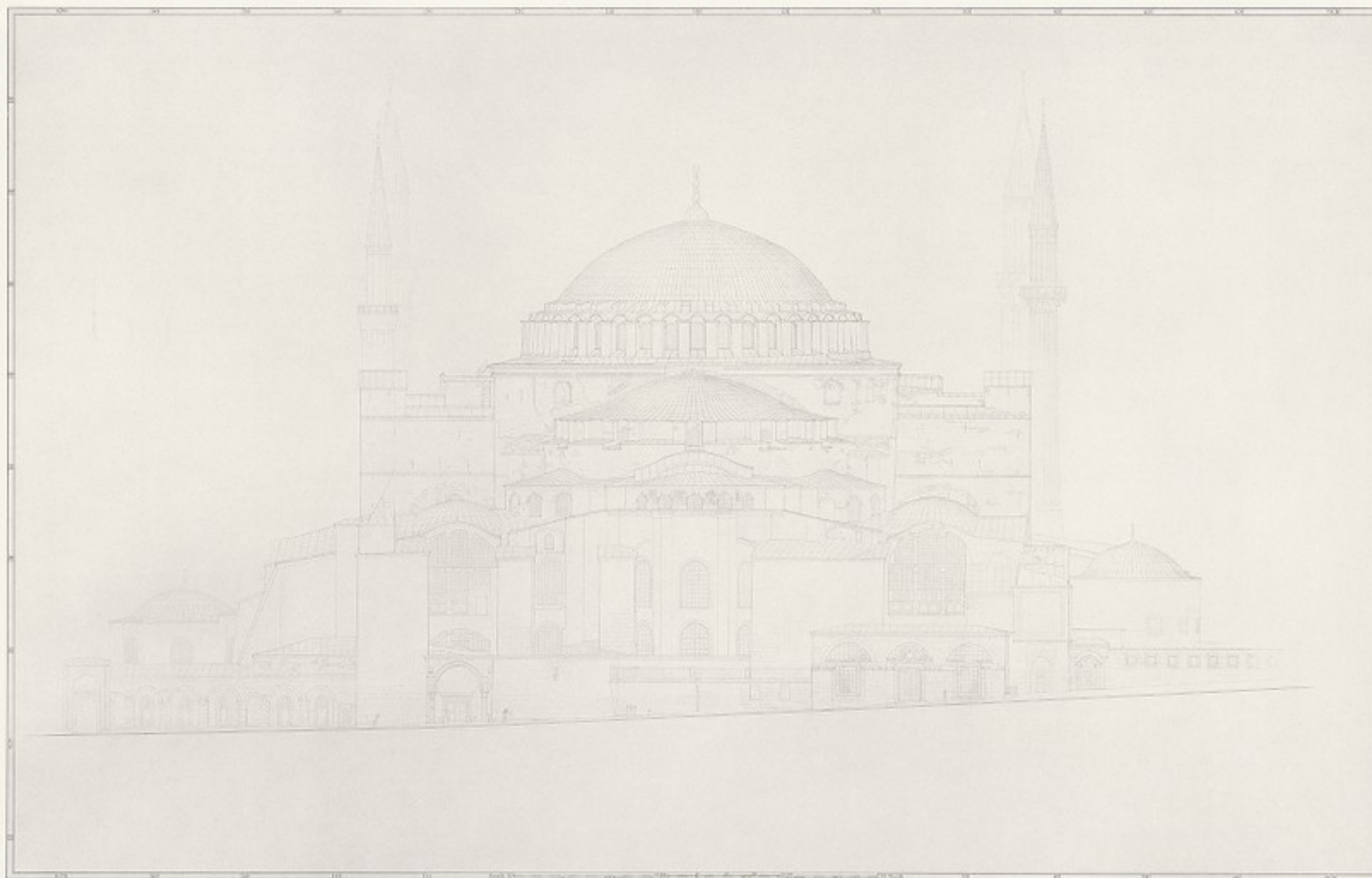


PLATE 8. EAST ELEVATION  
Scale = 1/250 m.



# SAINT SOPHIA

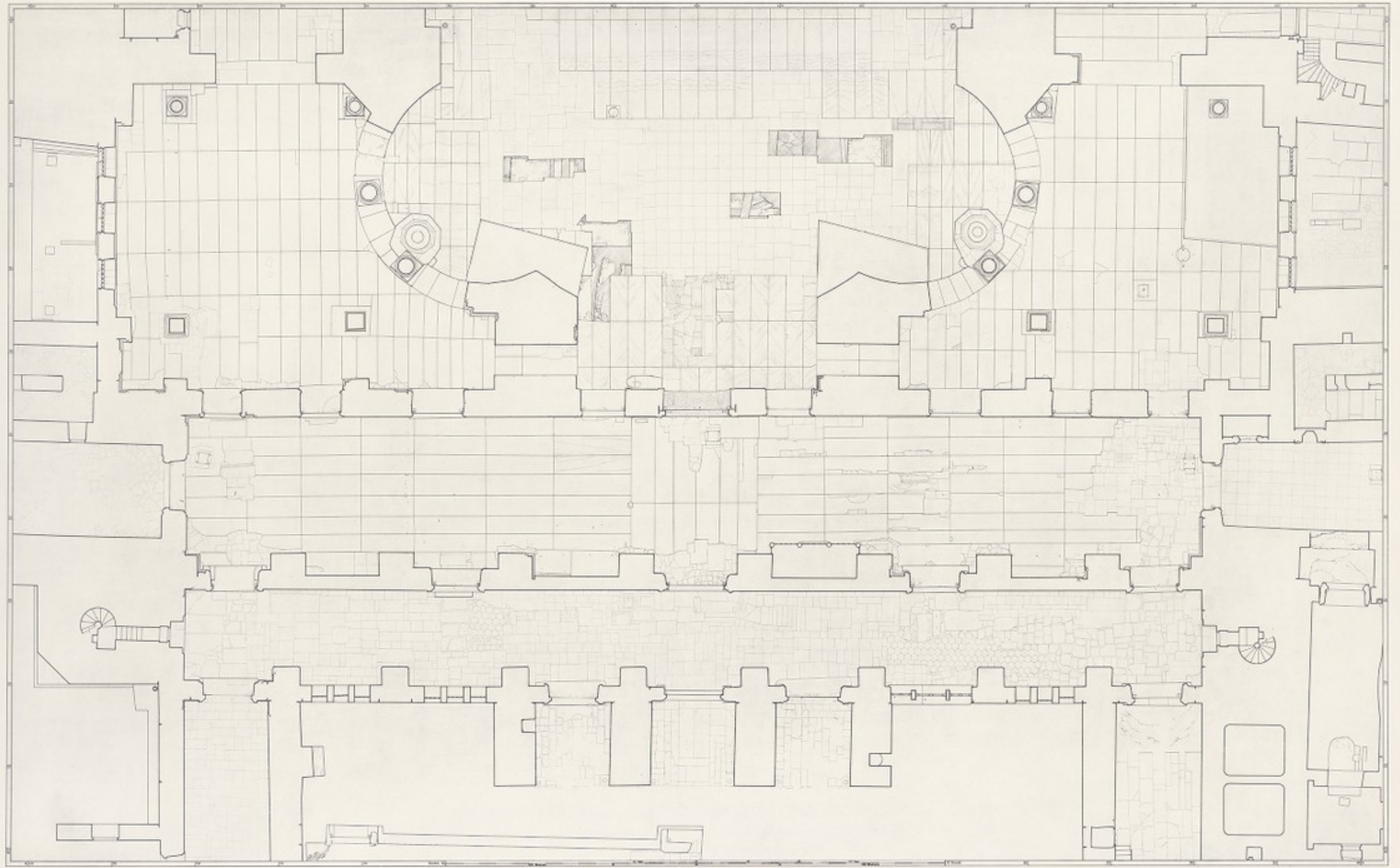


Plate 9. PLAN AT GROUND LEVEL, WESTERN AREAS:  
Nave, Side Aisles, Narthex, Exonarthex  
Scale — 1:200 ft.



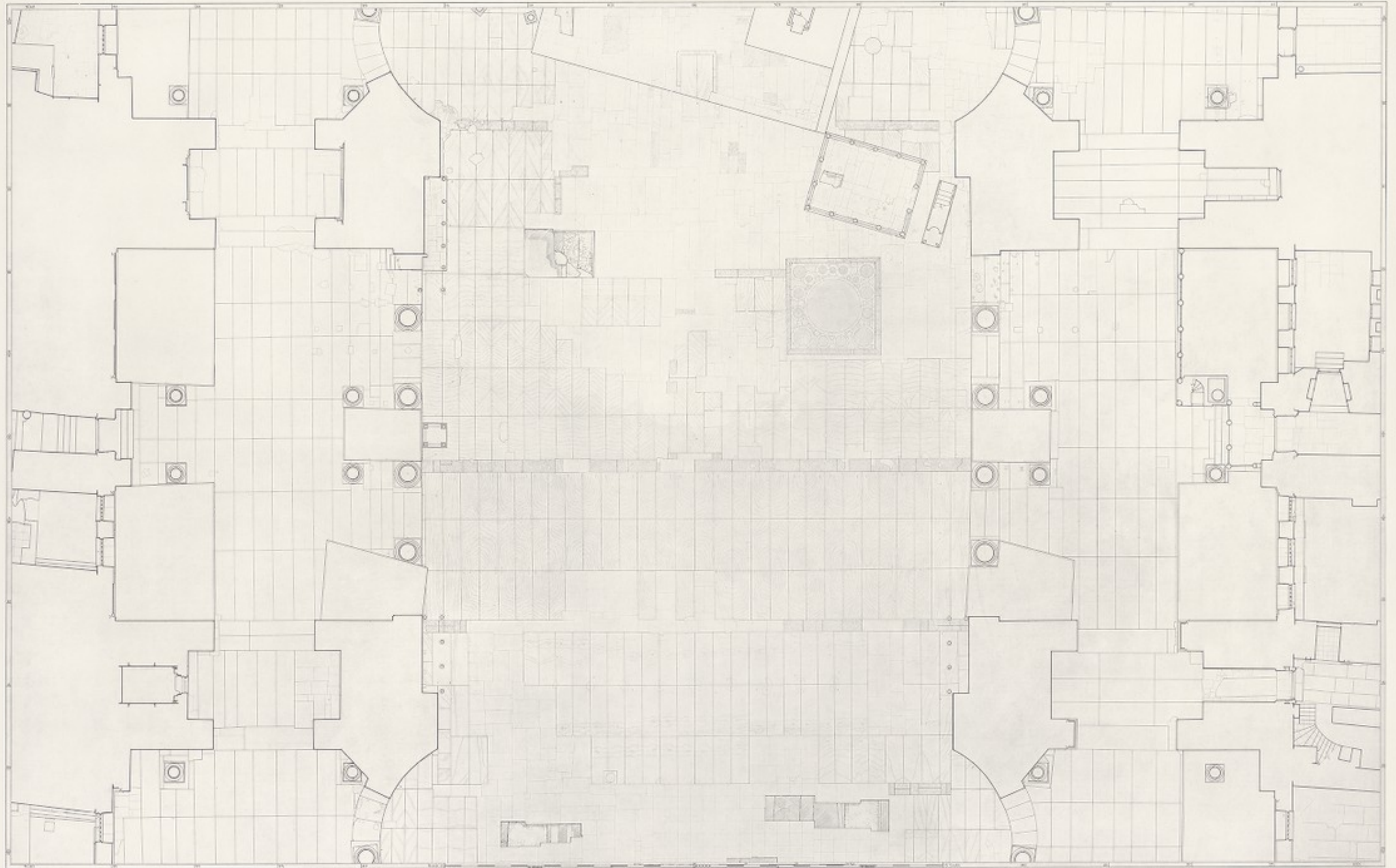


Plate 10. PLAN AT GROUND LEVEL, CENTRAL AREAS:  
Nave, Side Aisles  
Scale — 1:100 m.



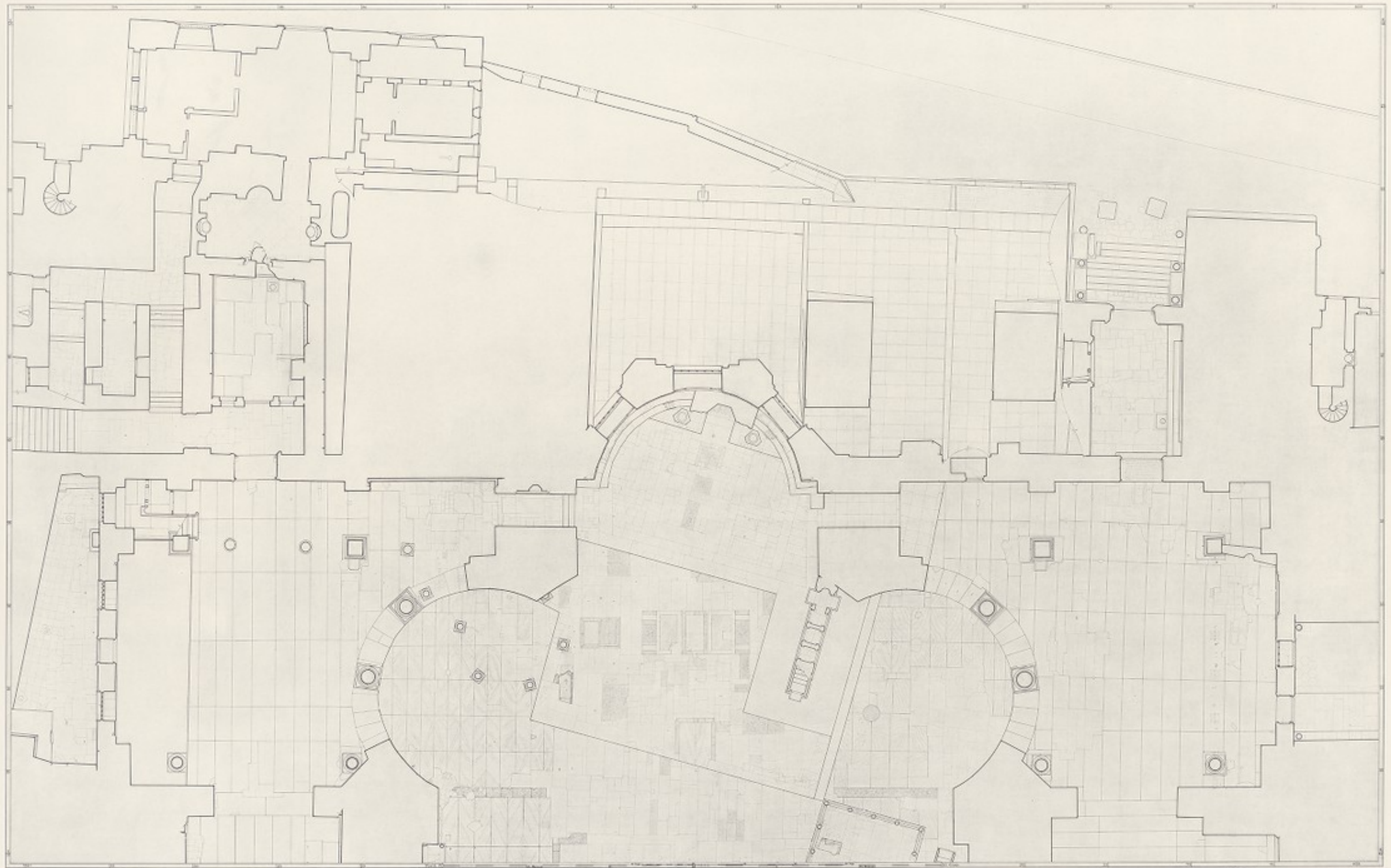


Plate 11. PLAN AT GROUND LEVEL, EASTERN AREAS:  
Nave, Side Aisles, Apse  
Scale = 1:100 m.





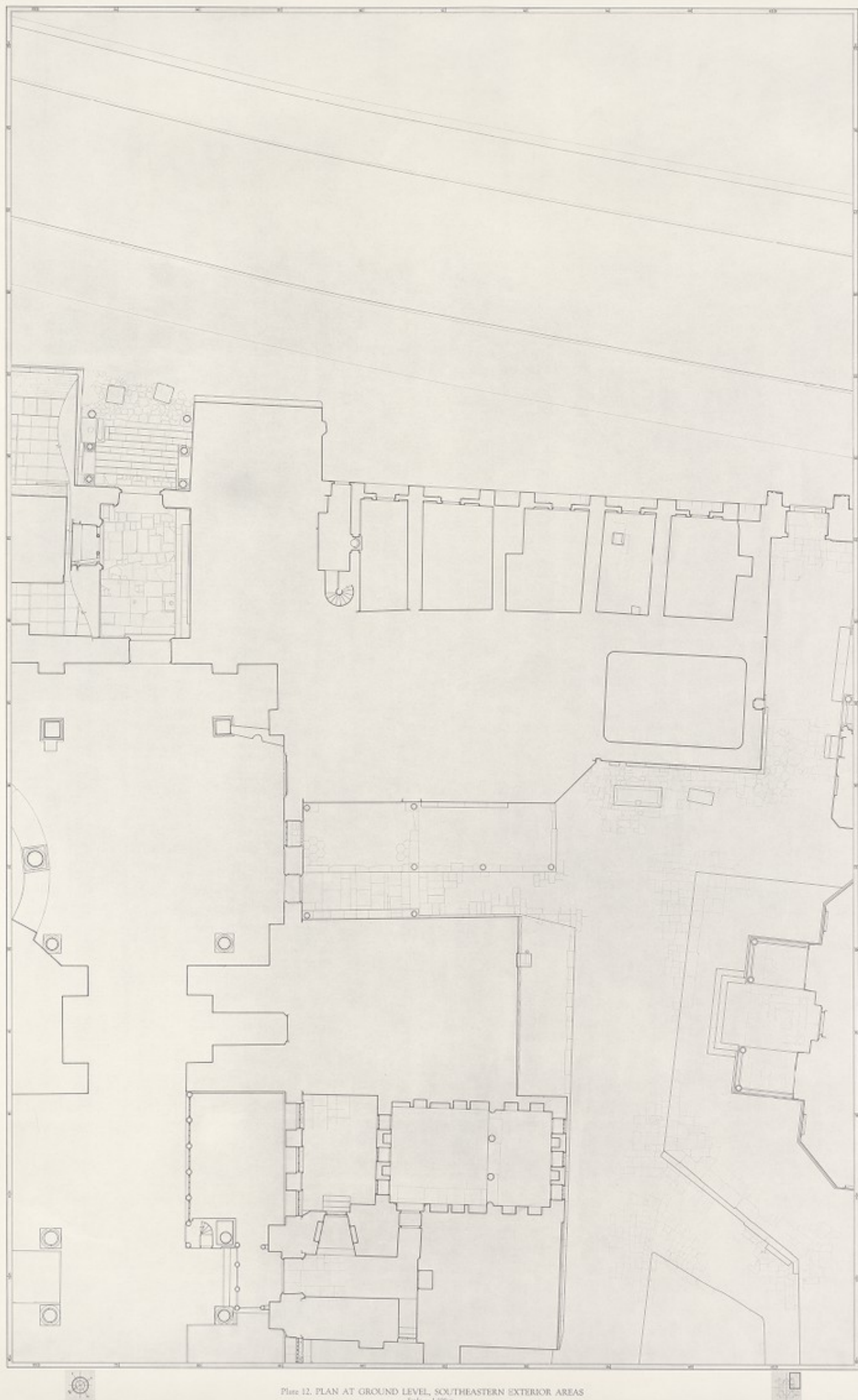


Plate 12. PLAN AT GROUND LEVEL, SOUTHEASTERN EXTERIOR AREAS  
Scale — 1:100 m.



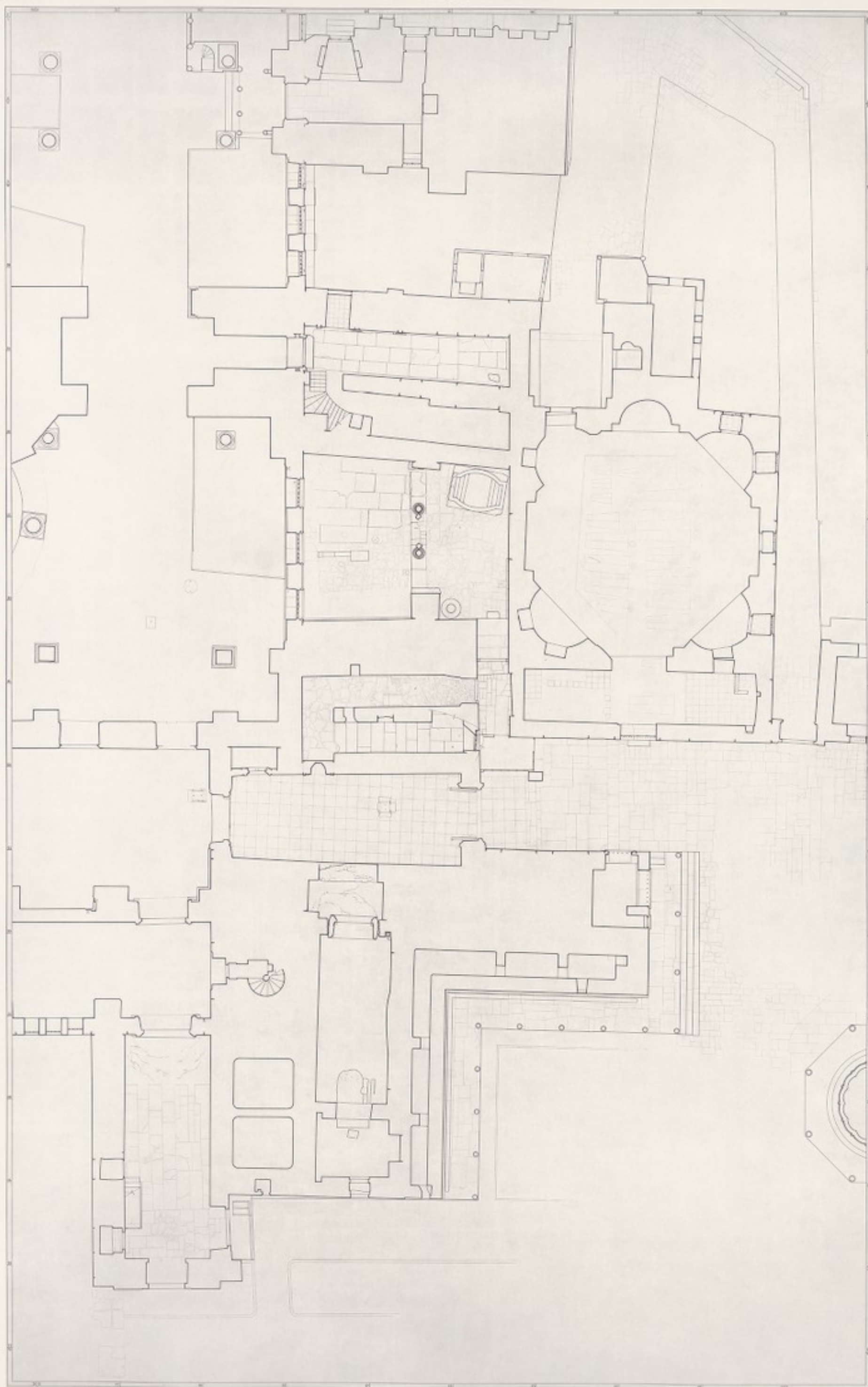


PLATE 13. PLAN AT GROUND LEVEL, SOUTHWESTERN EXTERIOR AREAS:  
Baptistry, Ramp, Vestibule, and other Byzantine and Turkish Structures  
Scale = 1:100 m.

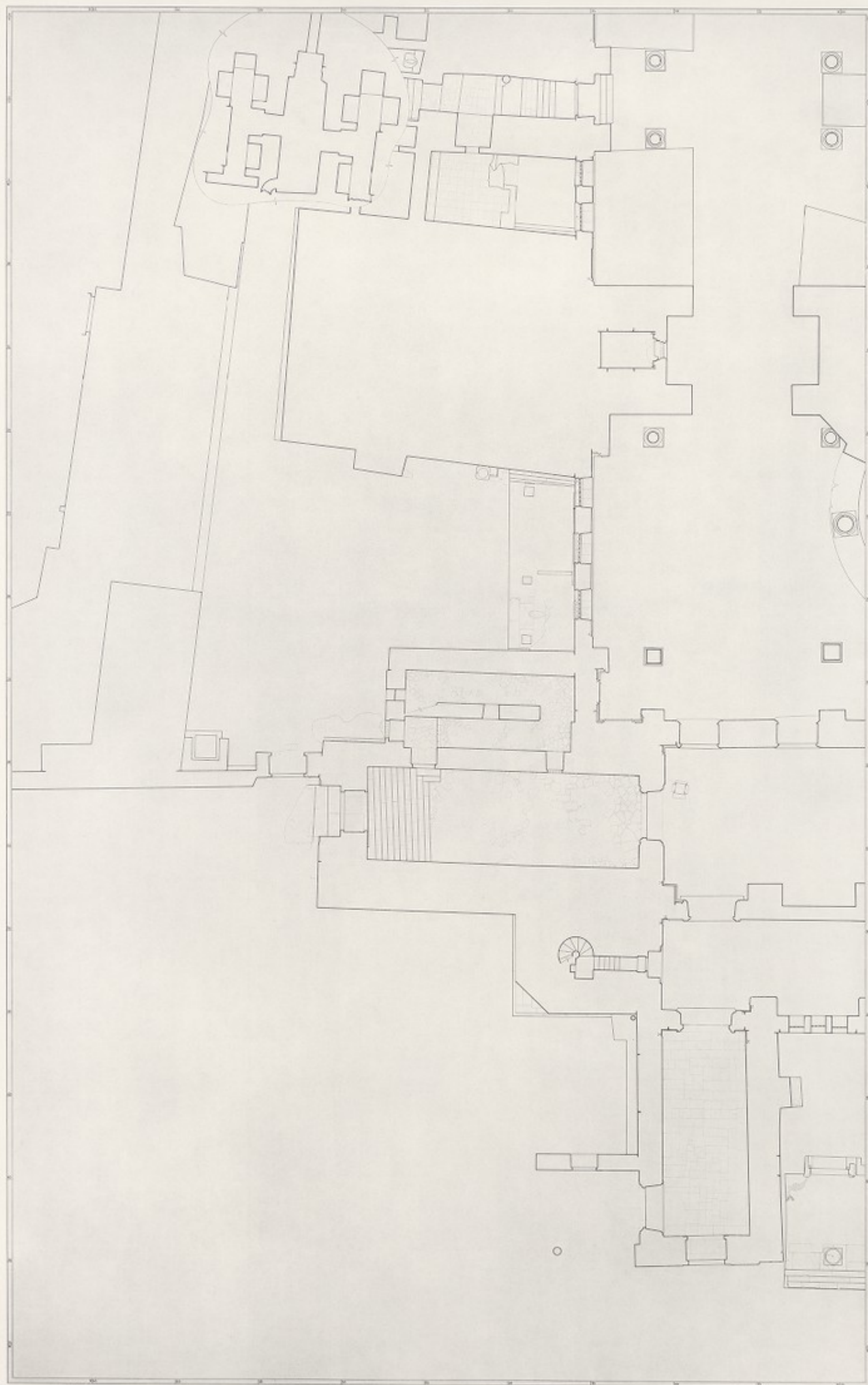


Plate 14. PLAN AT GROUND LEVEL, NORTHWESTERN EXTERIOR AREAS:  
Vestibule, Ramp  
Scale = 1:100 m.



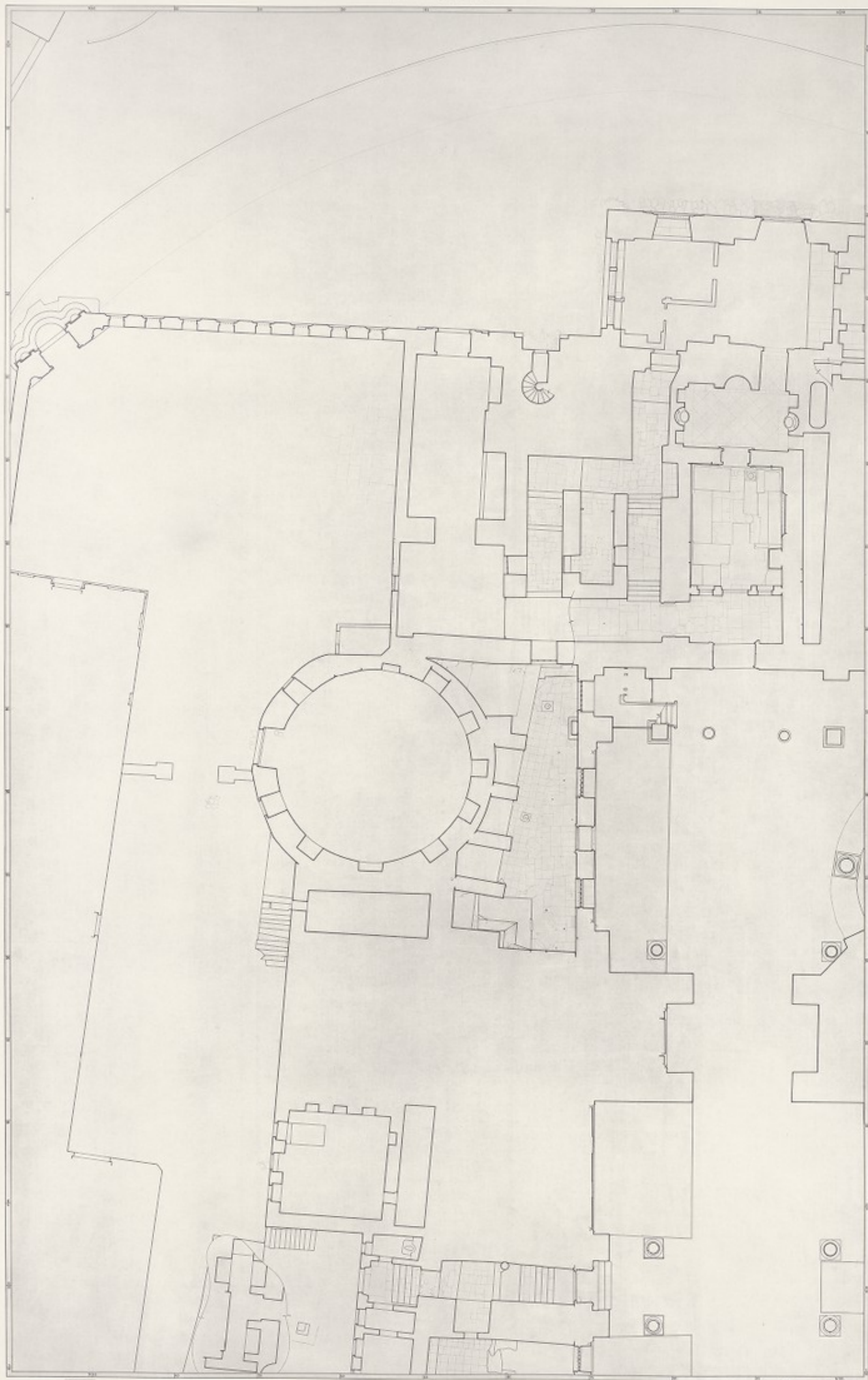


PLATE 15. PLAN AT GROUND LEVEL, NORTHEASTERN EXTERIOR AREAS:  
Treasury, Ramp, Ambochium  
Scale — 1:100 m.



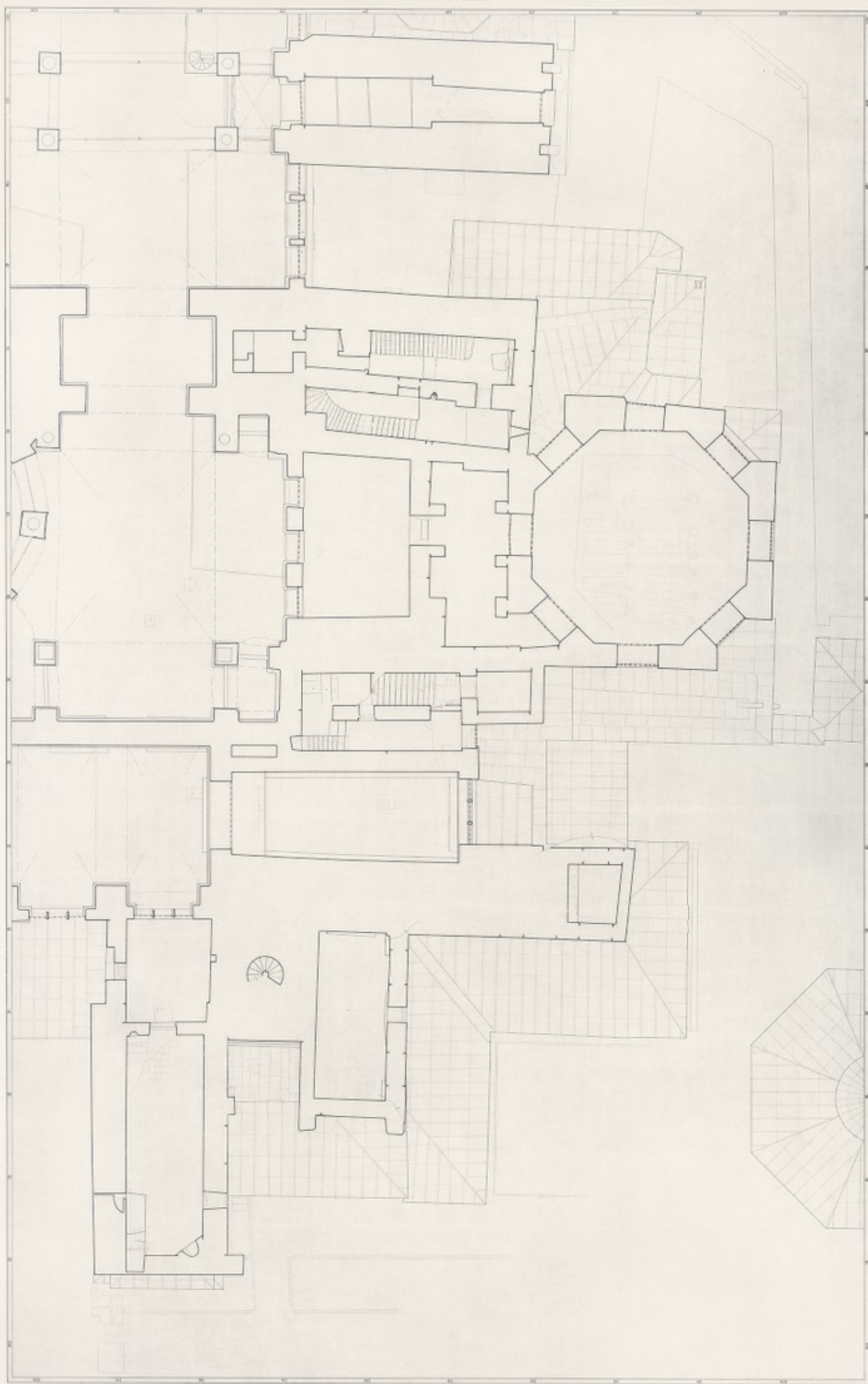


Plate 16. PLAN AT INTERMEDIATE LEVEL, SOUTHWESTERN EXTERIOR AREAS:  
Spaces between Ground and Gallery  
Scale — 1:100 m.



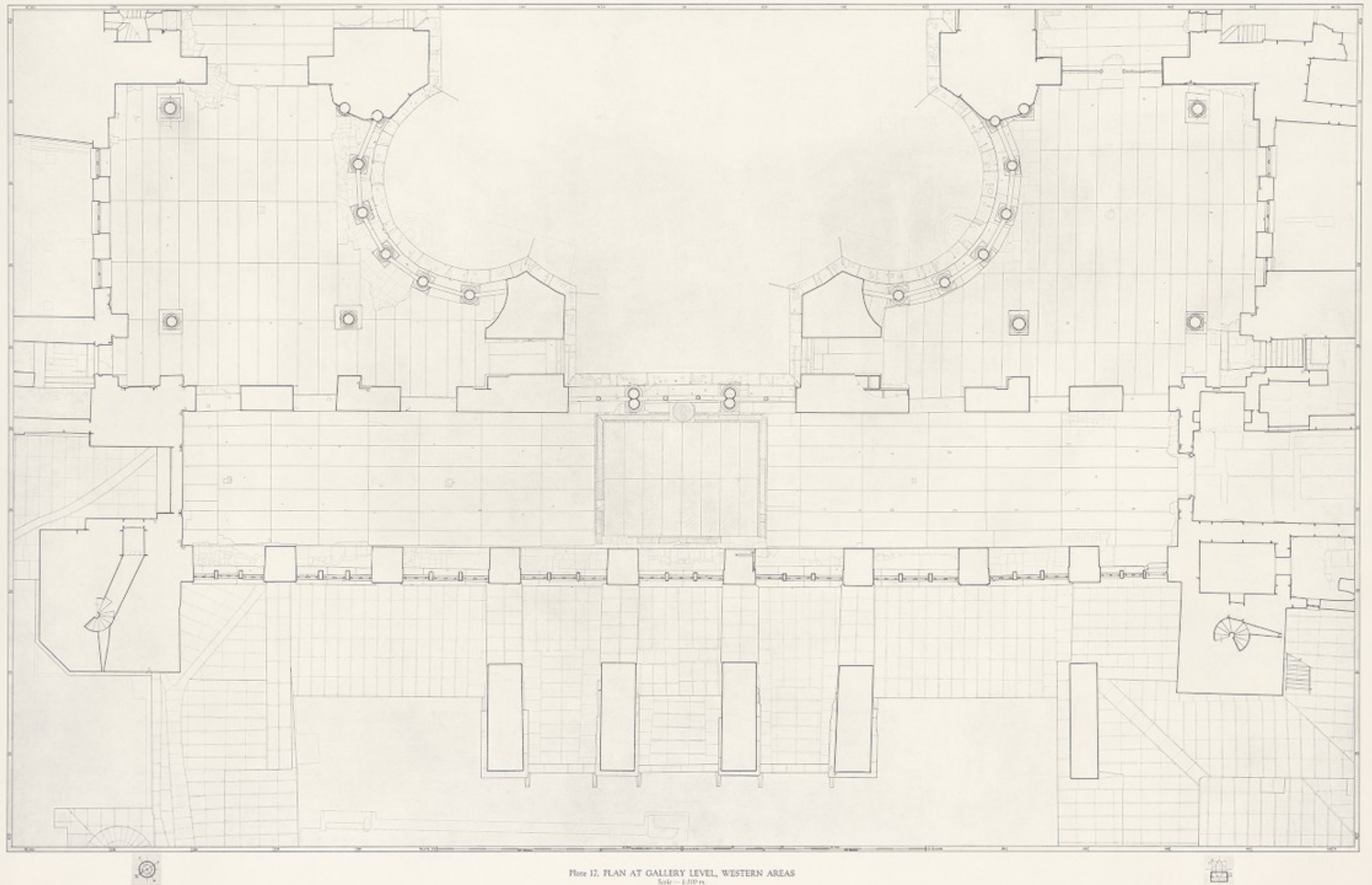


Plate 17. PLAN AT GALLERY LEVEL, WESTERN AREAS  
Scale — 1:100 m



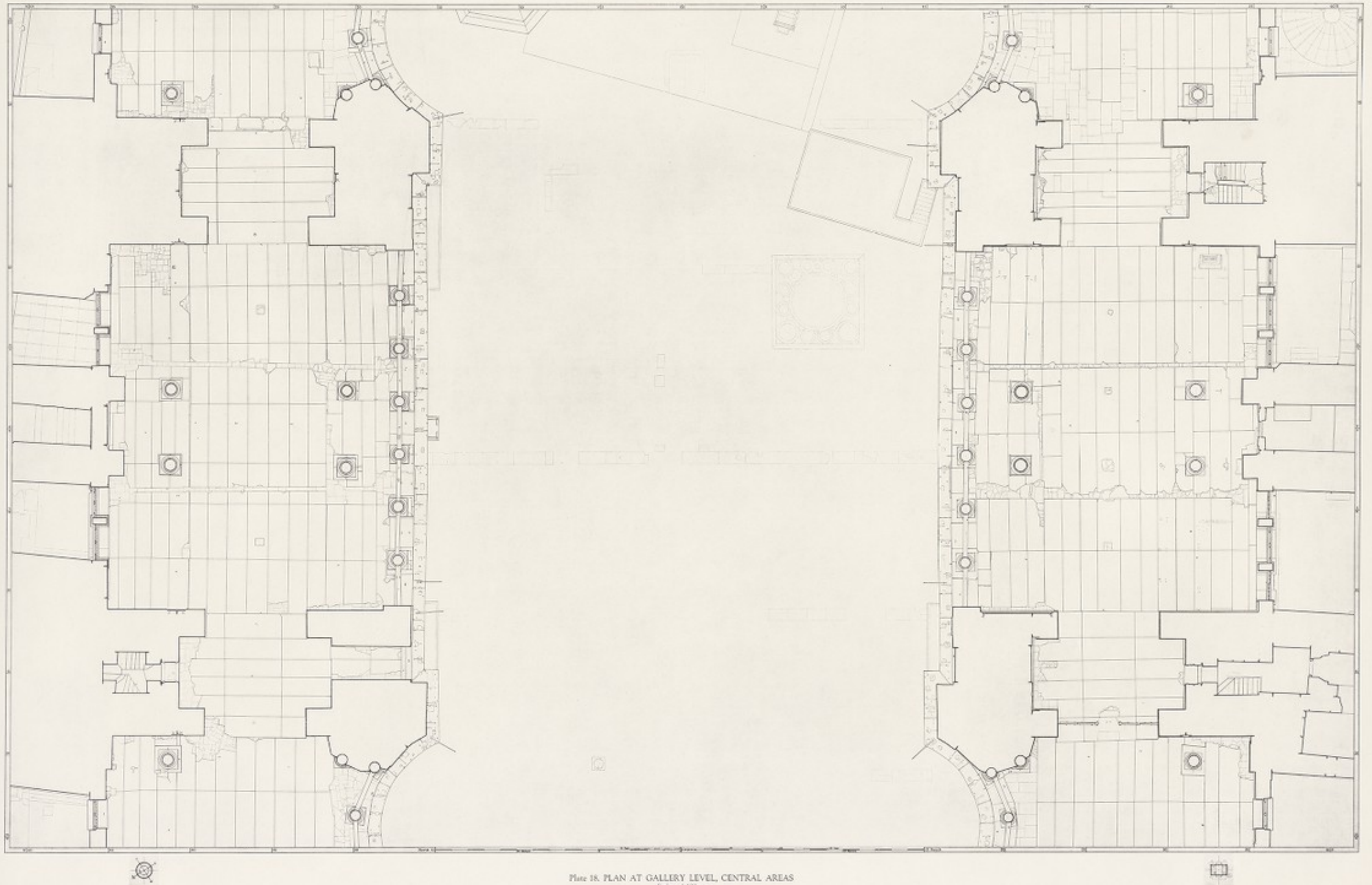


Plate 18. PLAN AT GALLERY LEVEL, CENTRAL AREAS  
Scale — 1:100 m.



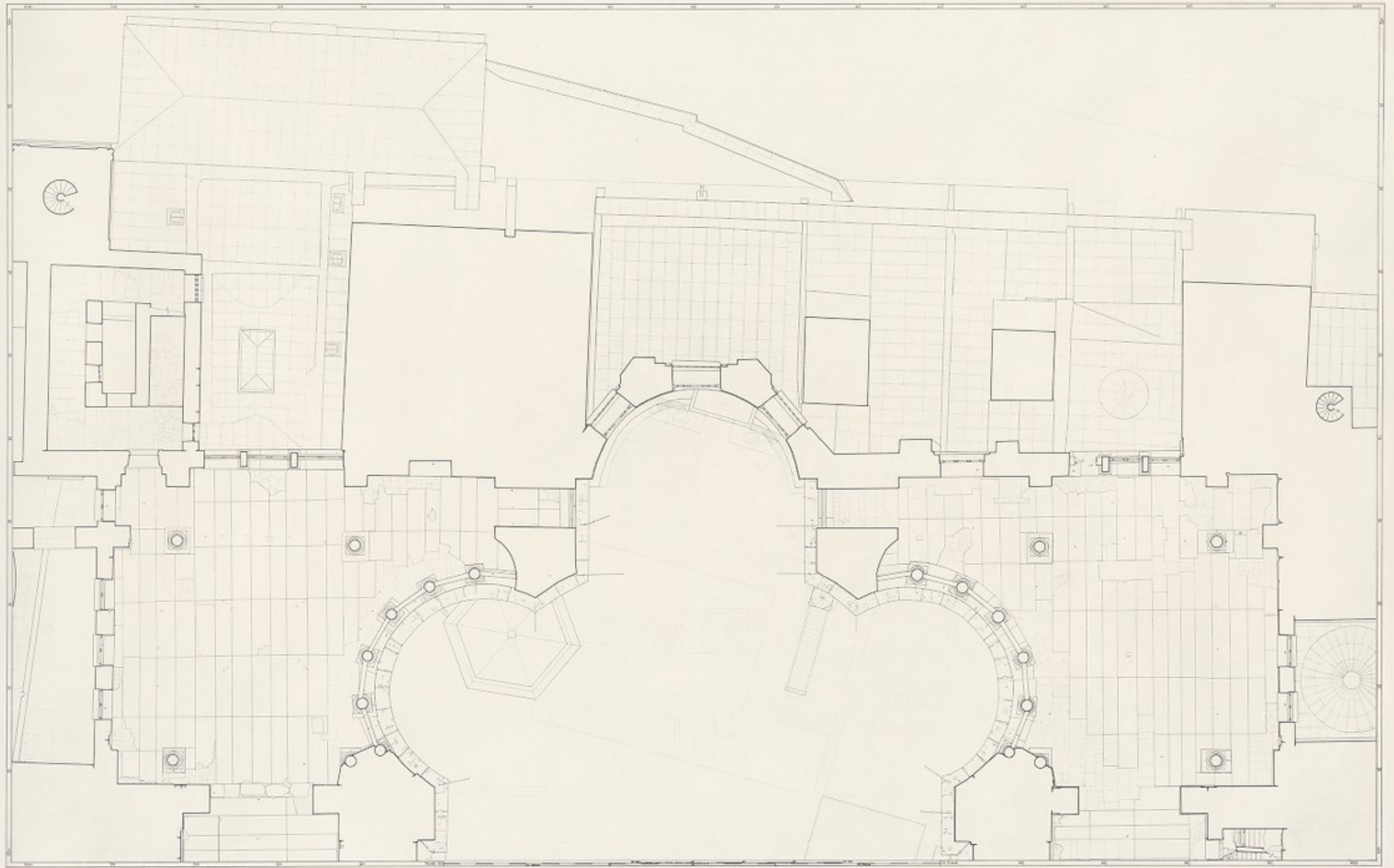


Plate 19. PLAN AT GALLERY LEVEL, EASTERN AREAS  
Scale — 1:100 m.



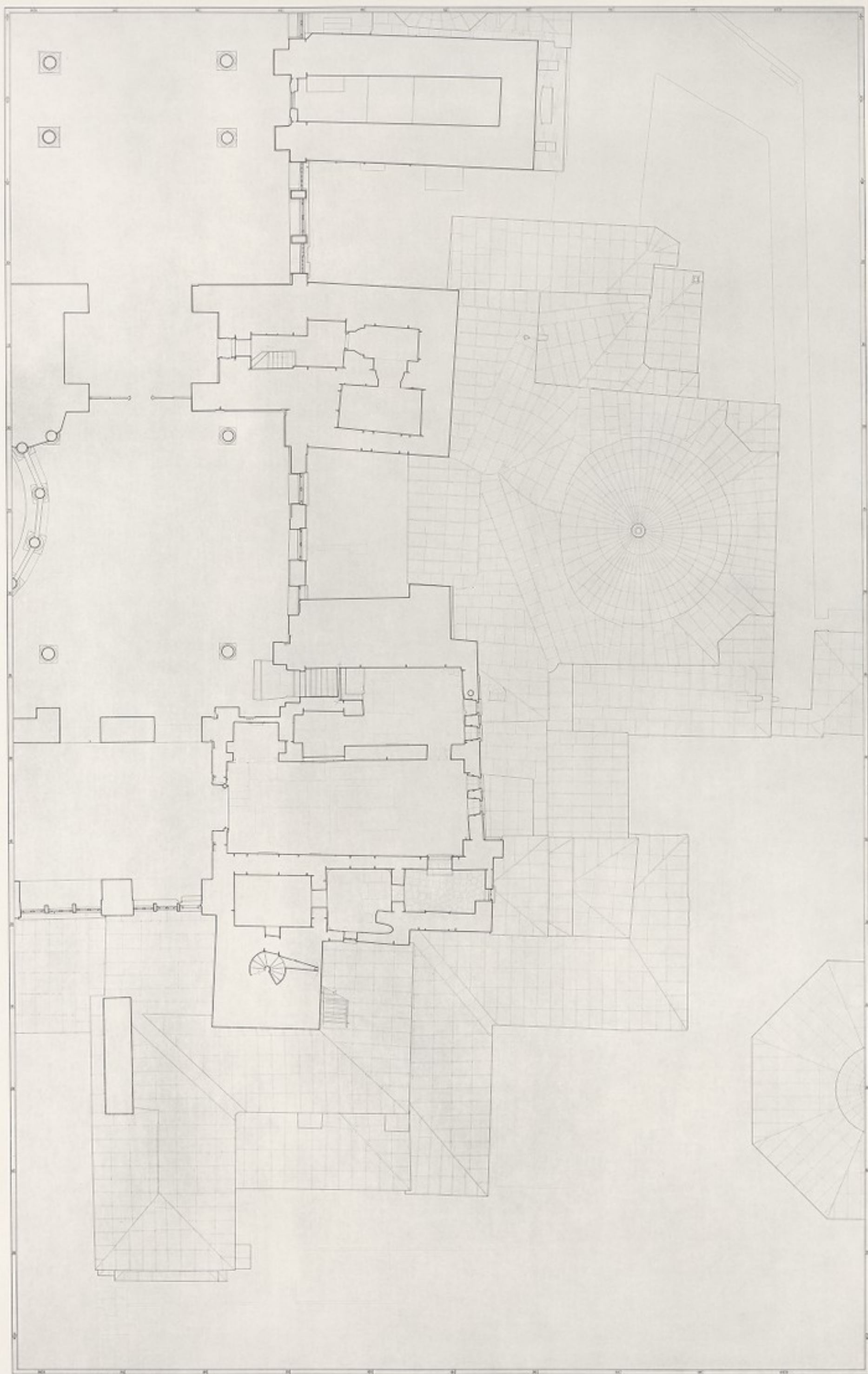


Plate 20. PLAN AT GALLERY LEVEL, SOUTHWESTERN EXTERIOR AREAS  
Scale — 1:500 m.



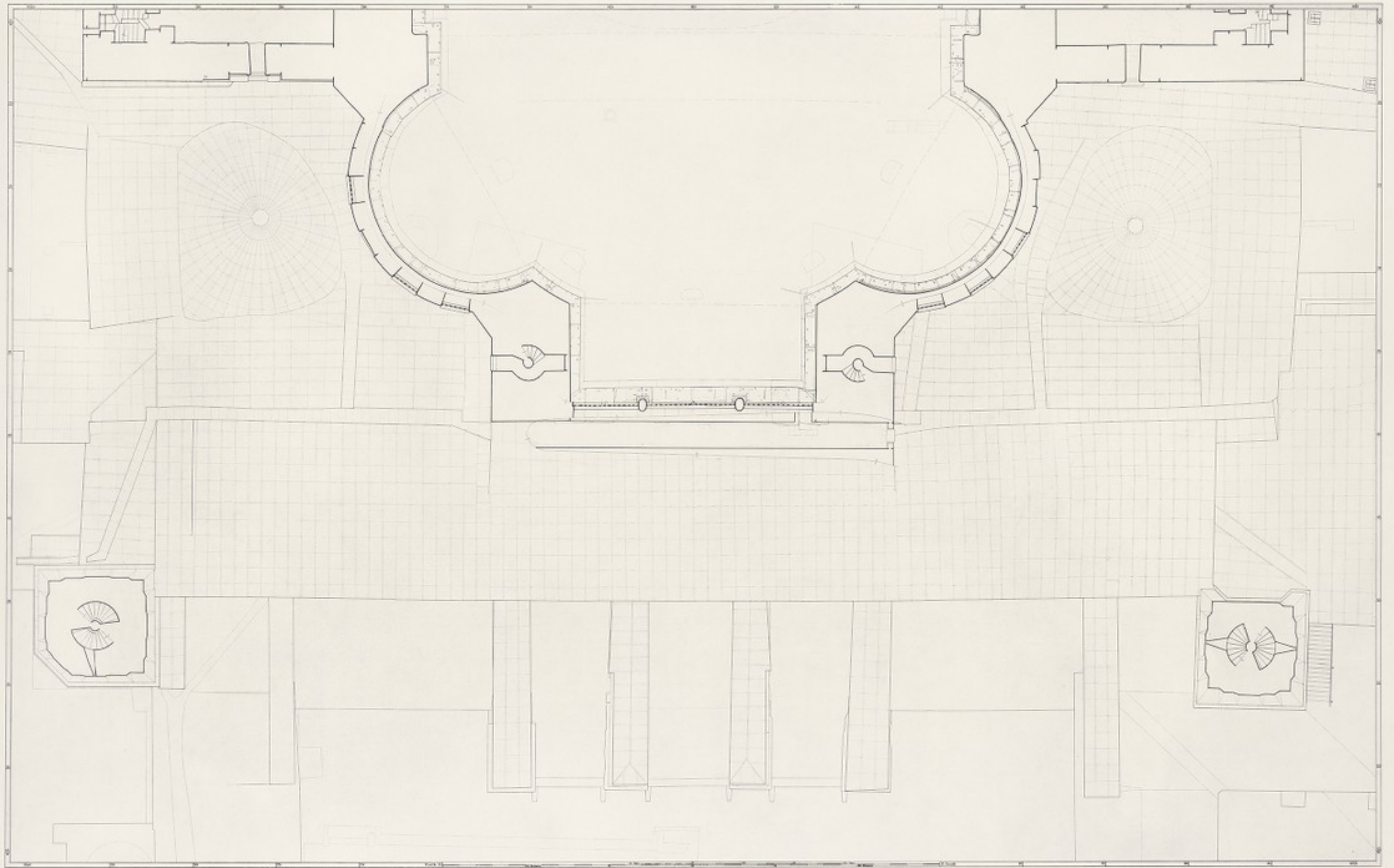


Plate 21. PLAN AT LEVEL OF UPPER CORNICE OF NAVE, WESTERN AREAS:  
Springings of Main Arch, Semidomes, and Barrel Vault  
Scale — 1:100 m.





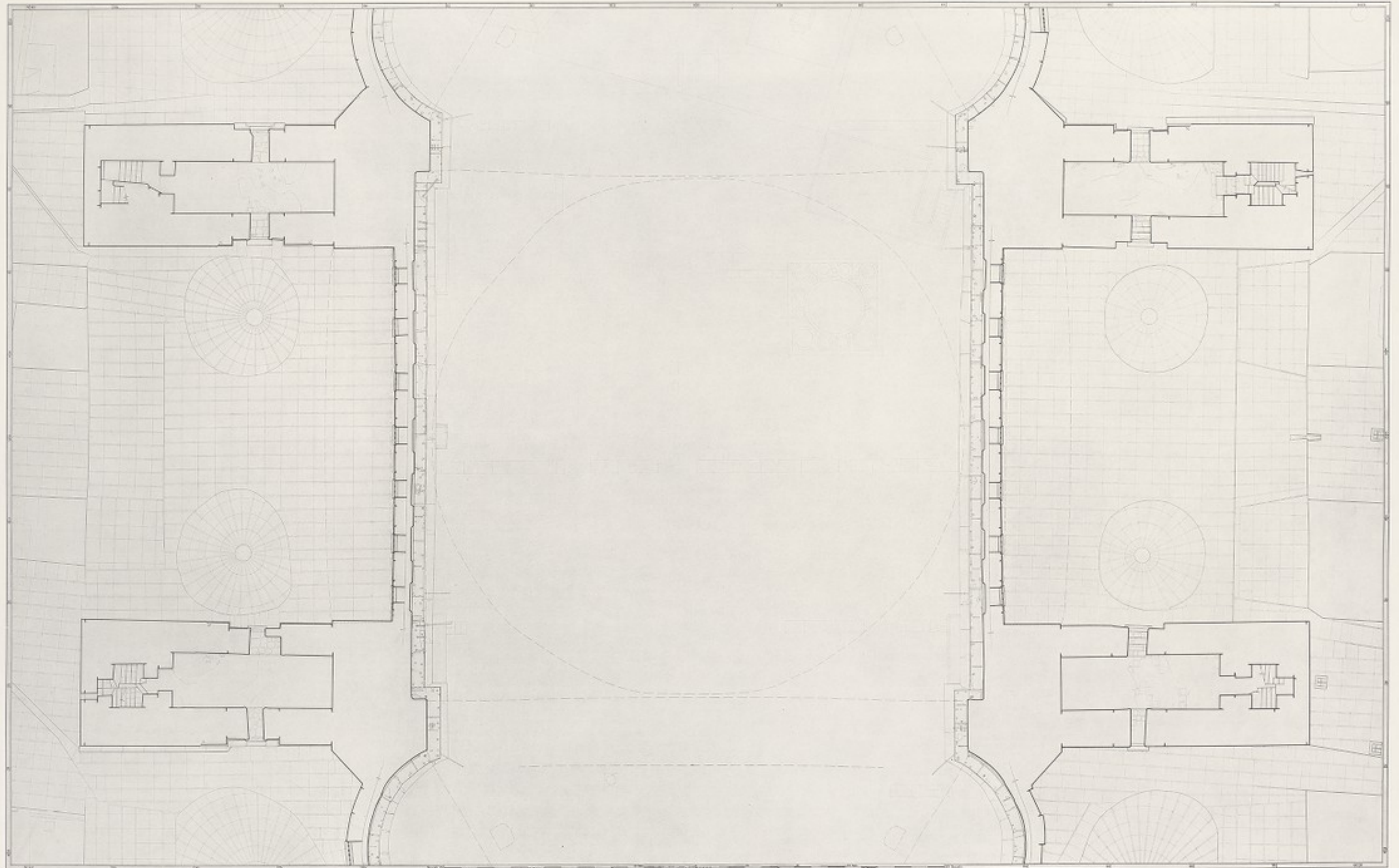


Plate 22. PLAN AT LEVEL OF UPPER CORNICE OF NAVE, CENTRAL AREAS:  
Springings of Main Arches and Pendentives, and Tympanum Wall  
Scale — 1:100 m.



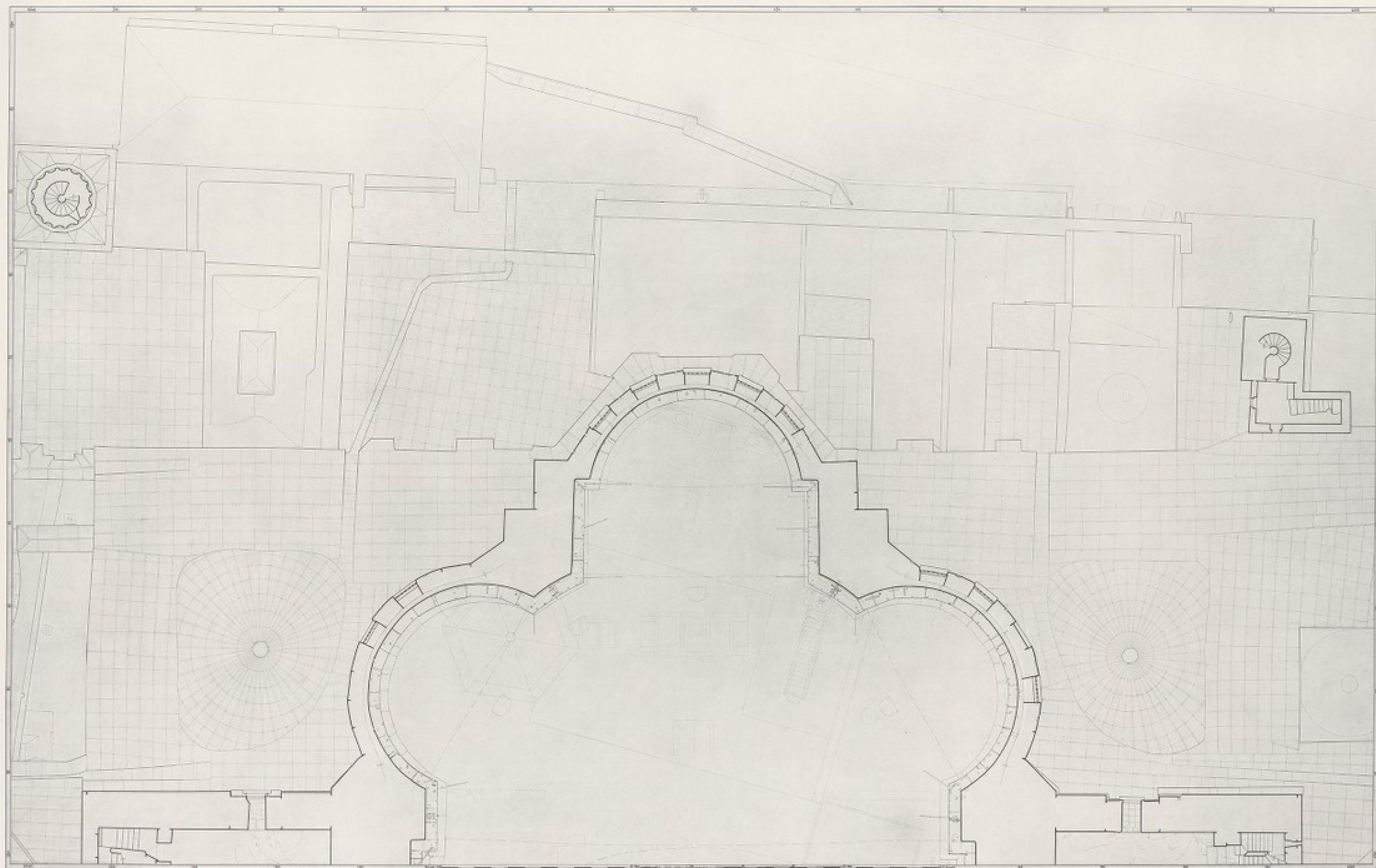


Plate 23. PLAN AT LEVEL OF UPPER CORNICE OF NAVE, EASTERN AREAS:  
 Springings of Main Arch, Semi-domes, Apse, Barrel Vault, and Conch  
 Scale = 1:100 m.



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Pl. 24

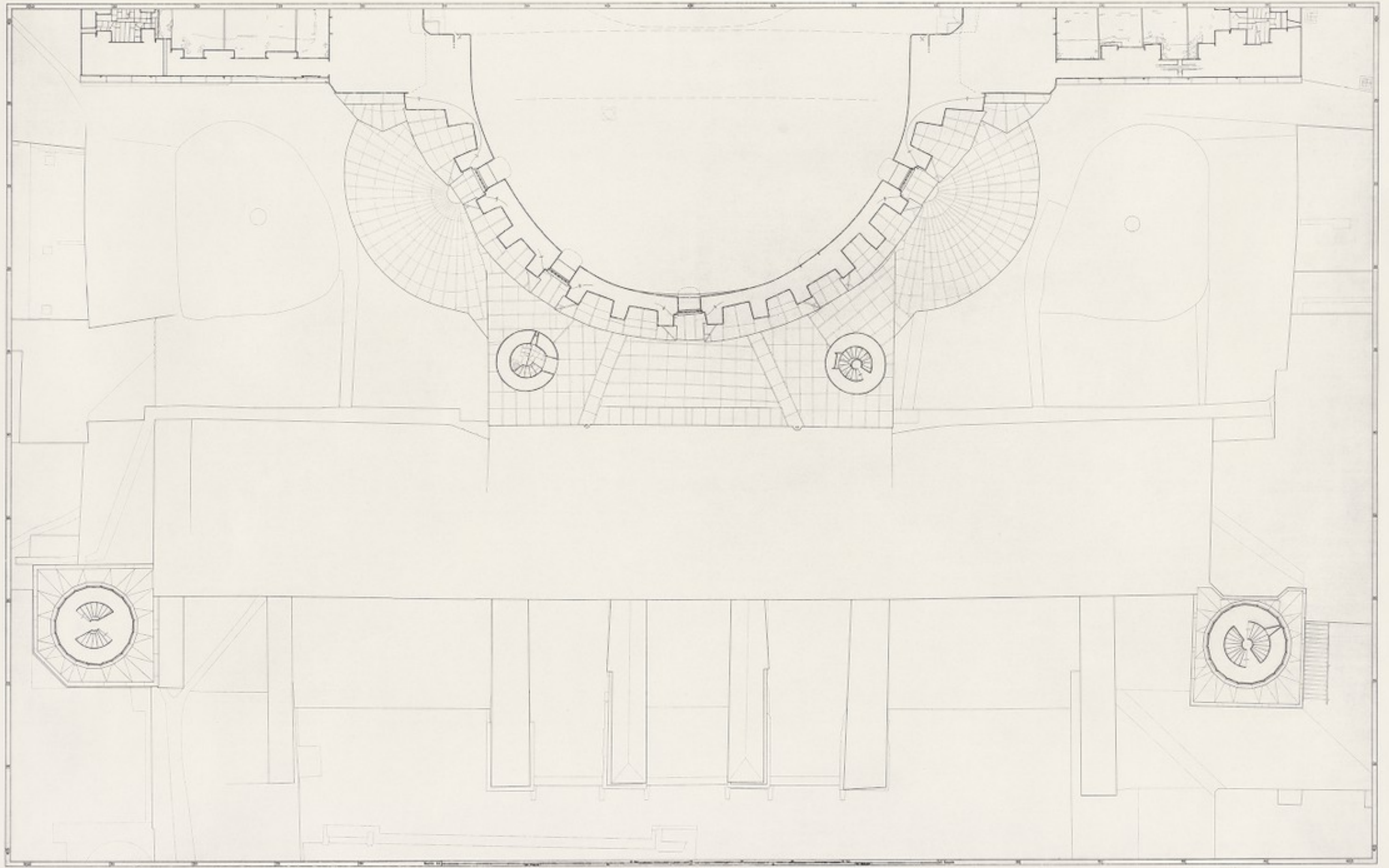


Plate 24. PLAN AT LEVEL OF MAIN SEMIDOMES: WEST  
Scale — 1:100 ex.



Pl. 24



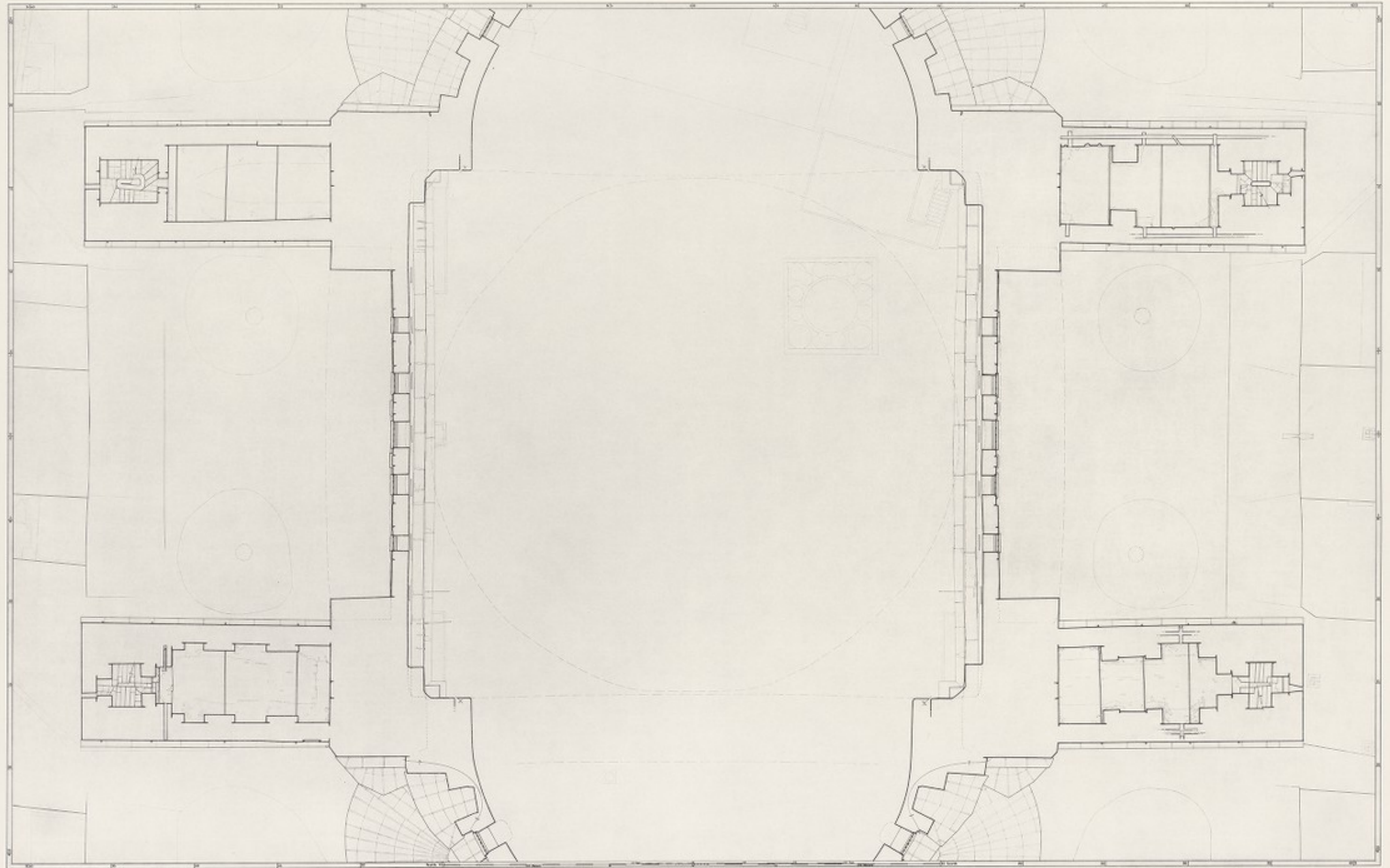


Plate 25. PLAN AT LEVEL OF MAIN SEMIDOMES: CENTER  
Scale — 1:400 m.



See 14

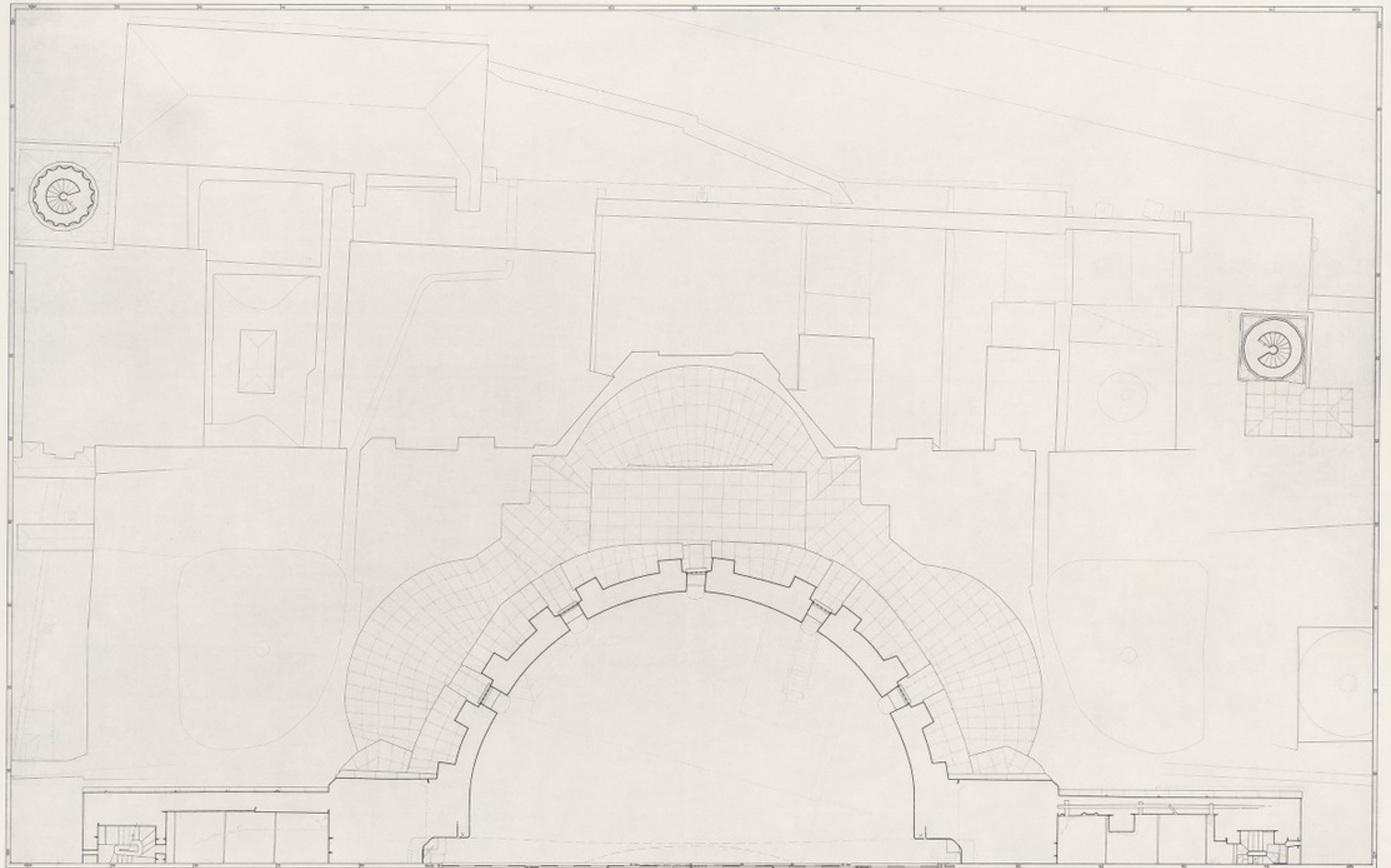


Plate 26. PLAN AT LEVEL OF MAIN SEMIDOMES: EAST  
Scale — 1:100 m.



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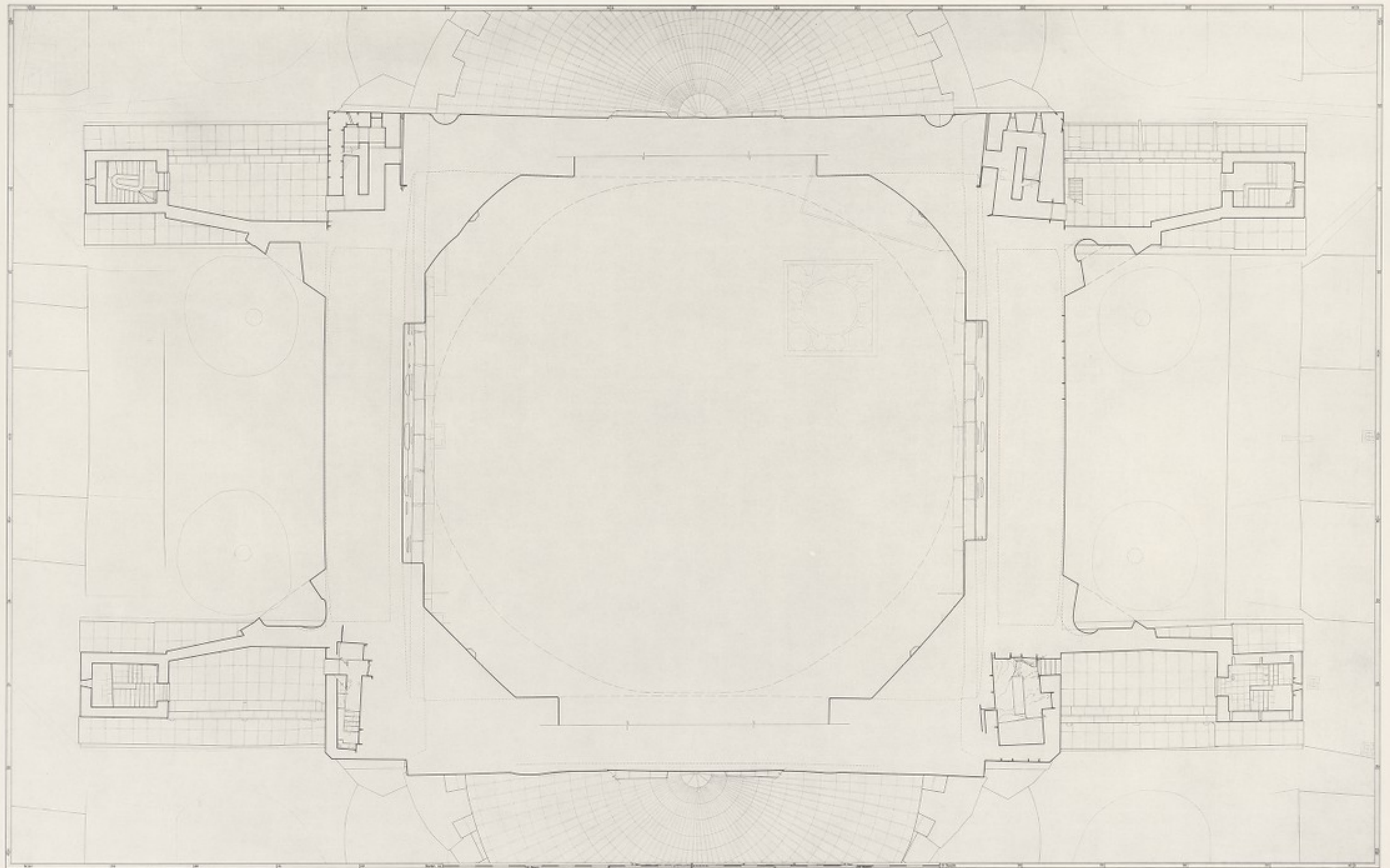


Plate 27. PLAN AT LEVEL OF BUTTRESS ROOFS,  
cutting through Pendentives and Dome Base  
Scale — 1:100 m.



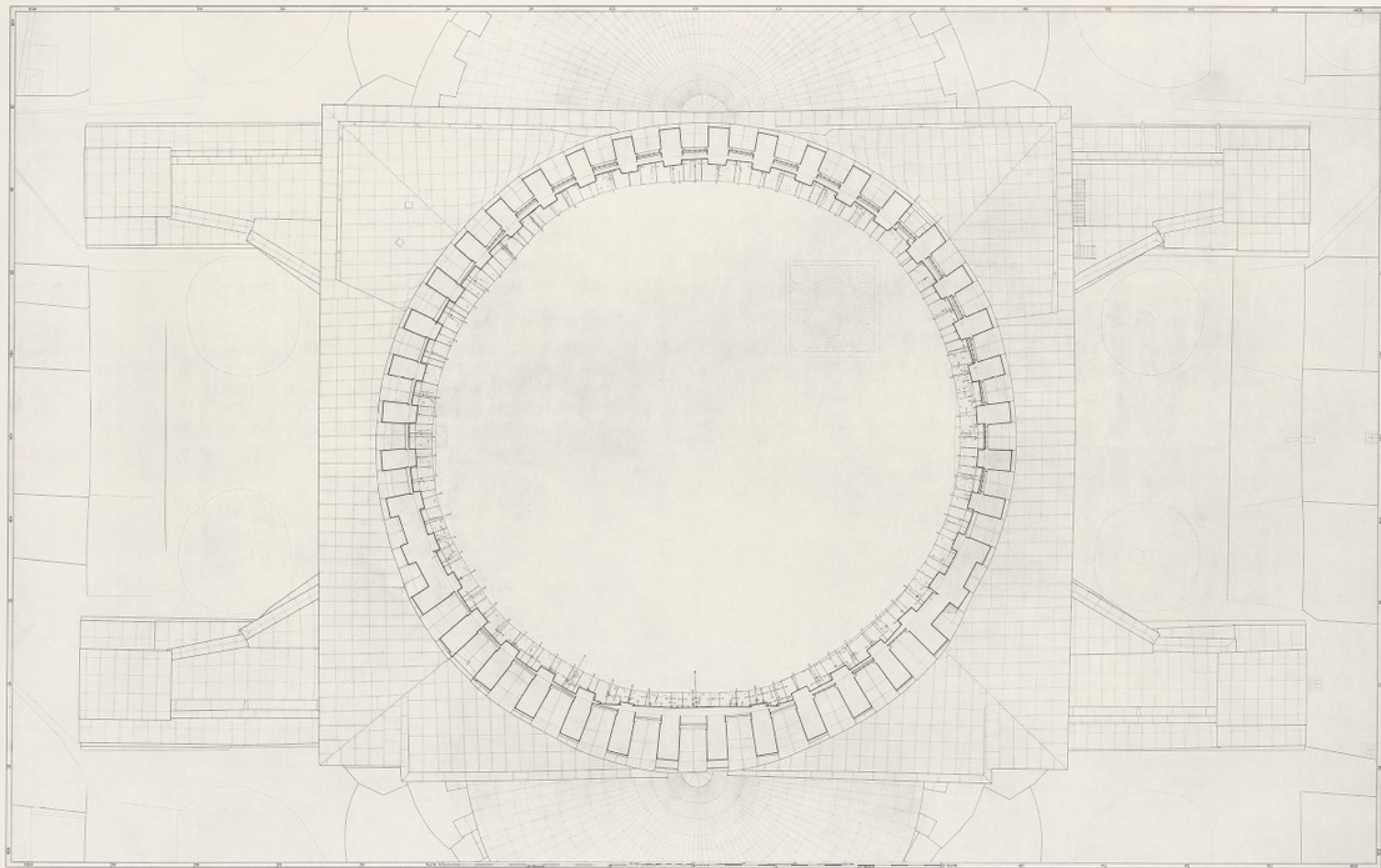


Plate 28. PLAN OF DOME AT CORNICE AND WINDOW LEVELS  
Scale = 1:100 m.





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PL. 29

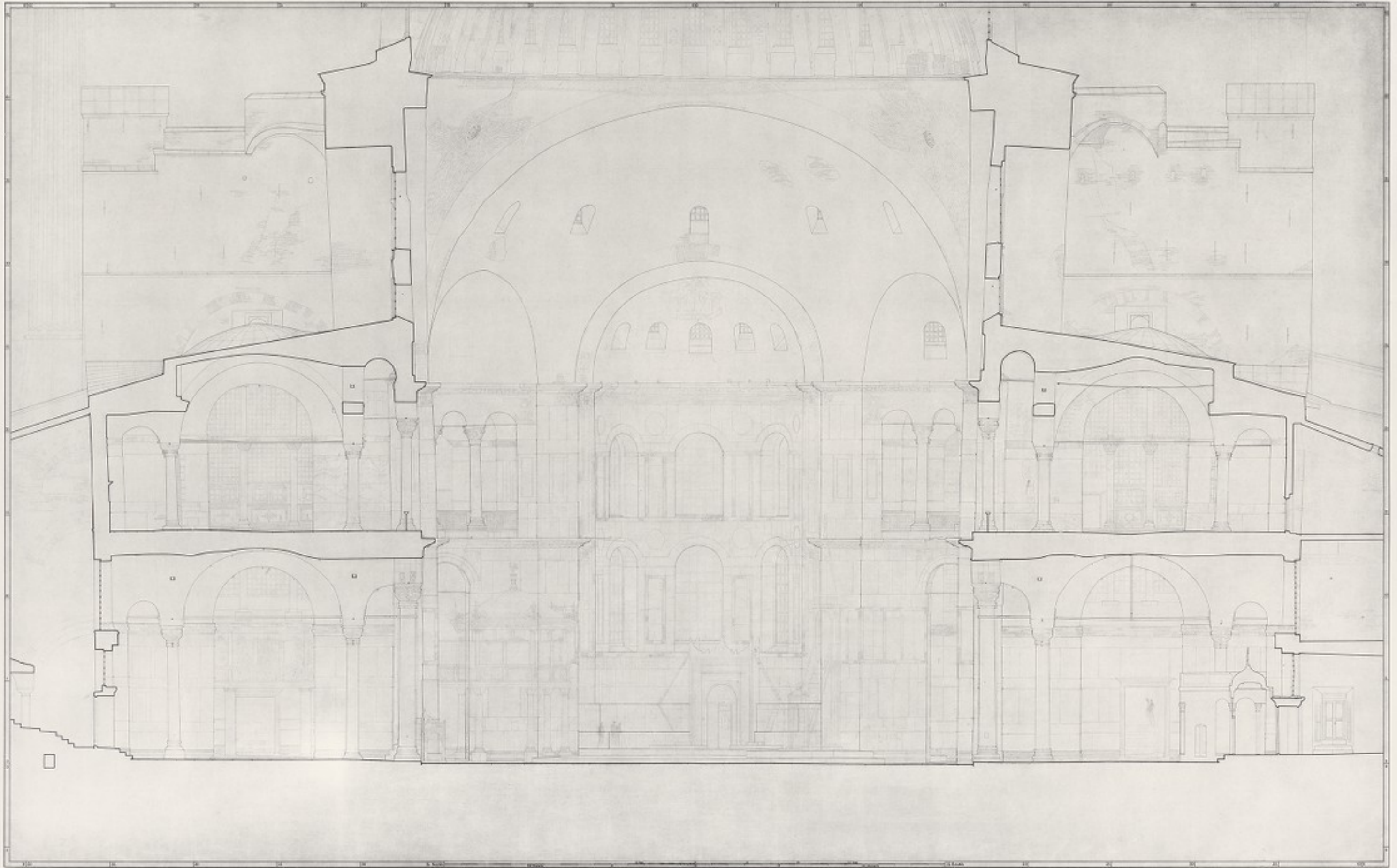


Plate 29. TRANSVERSE SECTION, LOOKING EAST  
Nave Floor to Dome Cornice  
Scale — 1:100 m.

PL. 29



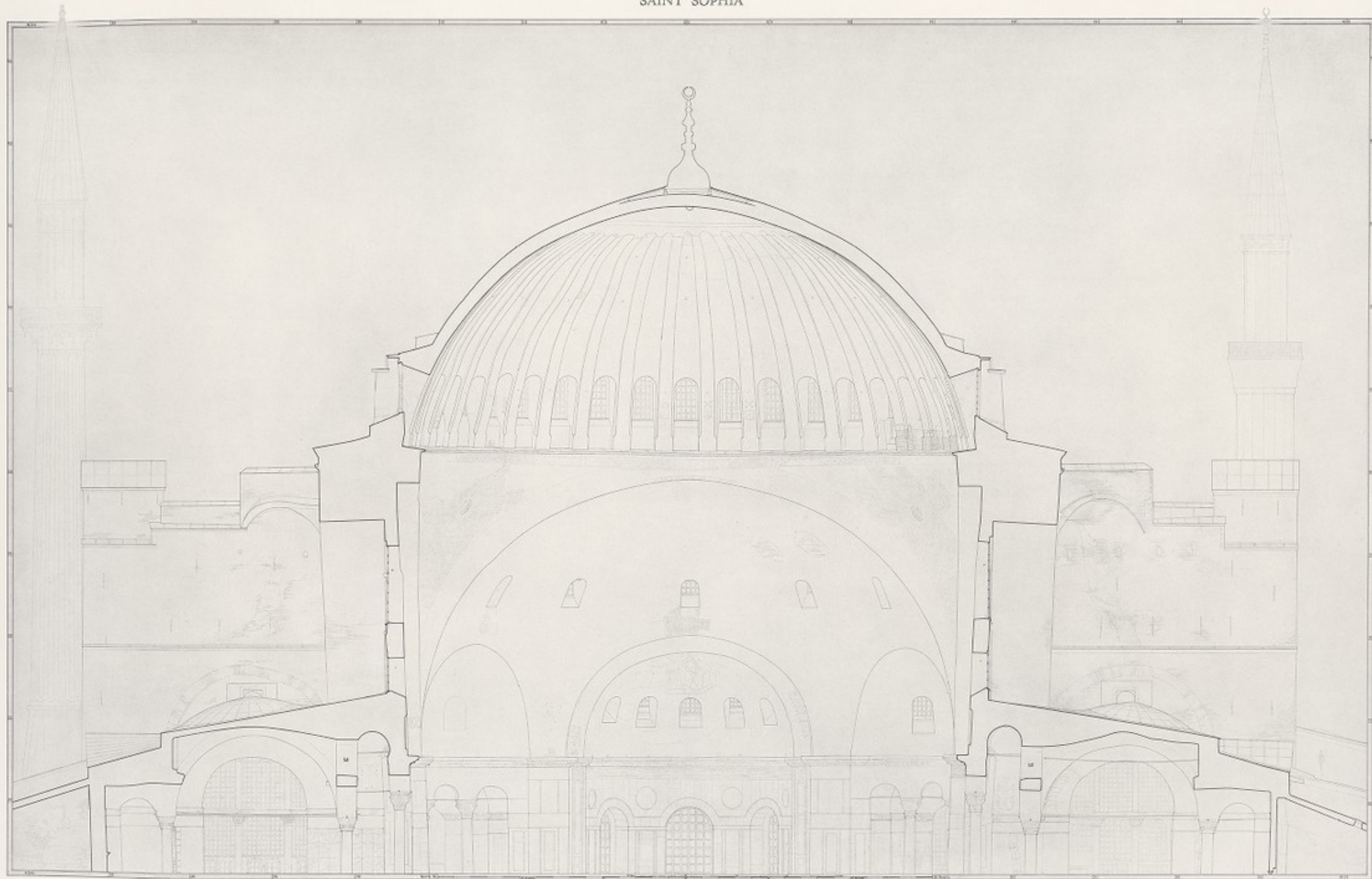


FIGURE 30. TRANSVERSE SECTION, LOOKING EAST  
Higher Elements (Upper Parts of Gallery and Dome)  
Scale = 1:100 m.



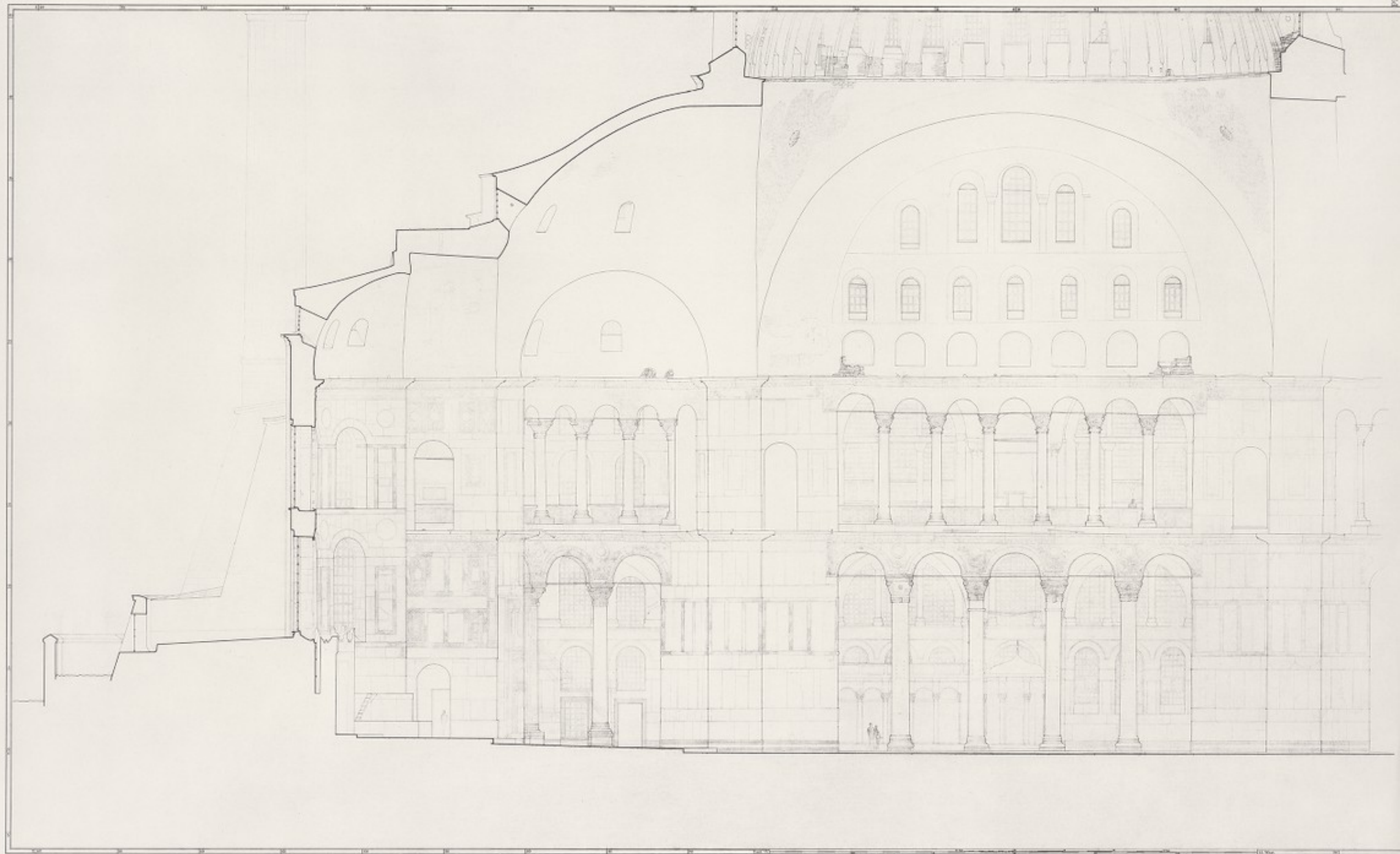


Plate 31. LONGITUDINAL SECTION, LOOKING SOUTH  
Apse, East Semidome, and Main Piers (Nave Floor to Dome Cornice)  
Scale — 1:100 m.



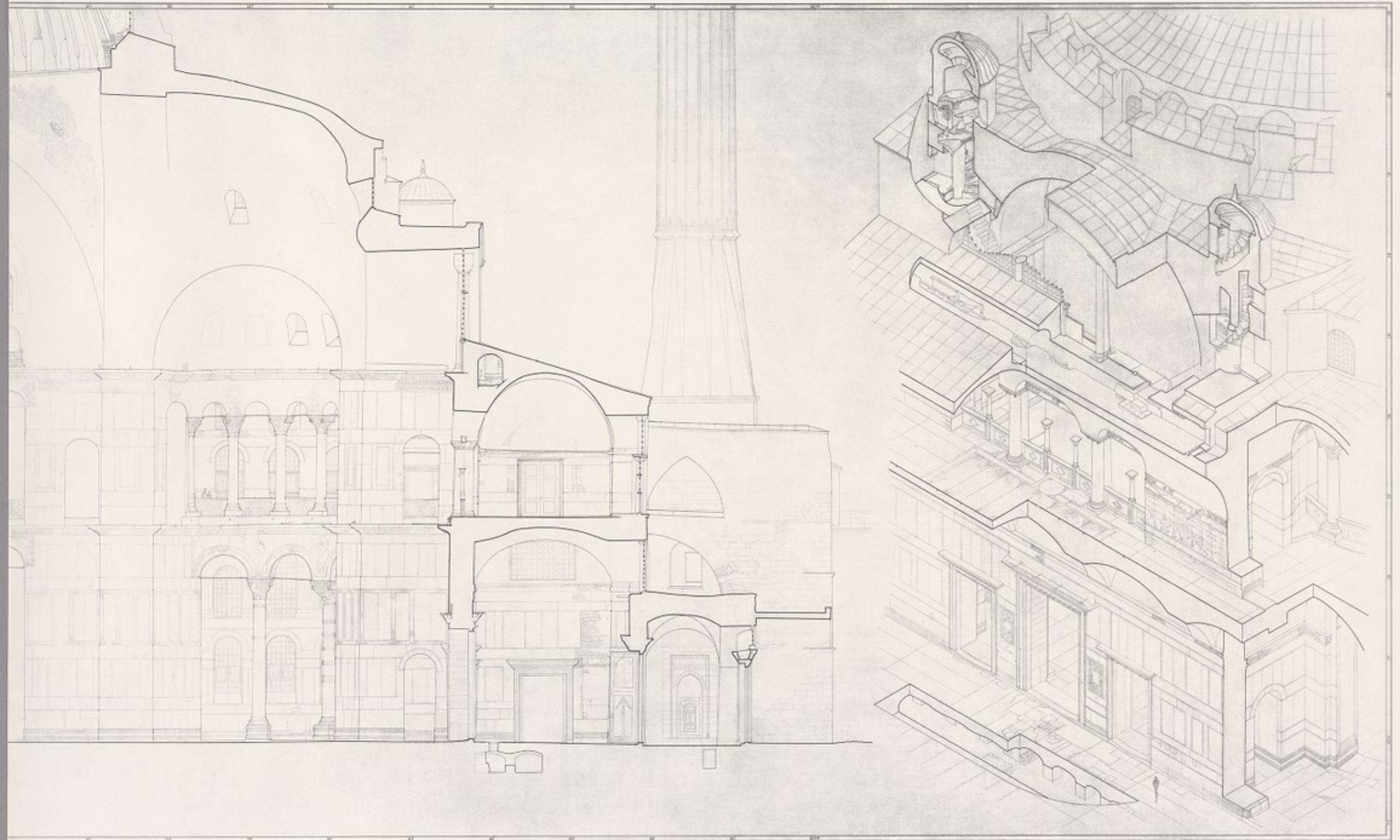


Plate 31A. LONGITUDINAL SECTION, LOOKING SOUTH  
West Semidome and Narthex (Nave Floor to Dome Cornice)  
Scale = 1:100 m

Plate 31B. CUTAWAY ISOMETRIC VIEW  
Imperial Door, West Gallery, and West Window  
Scale = 1:100 m



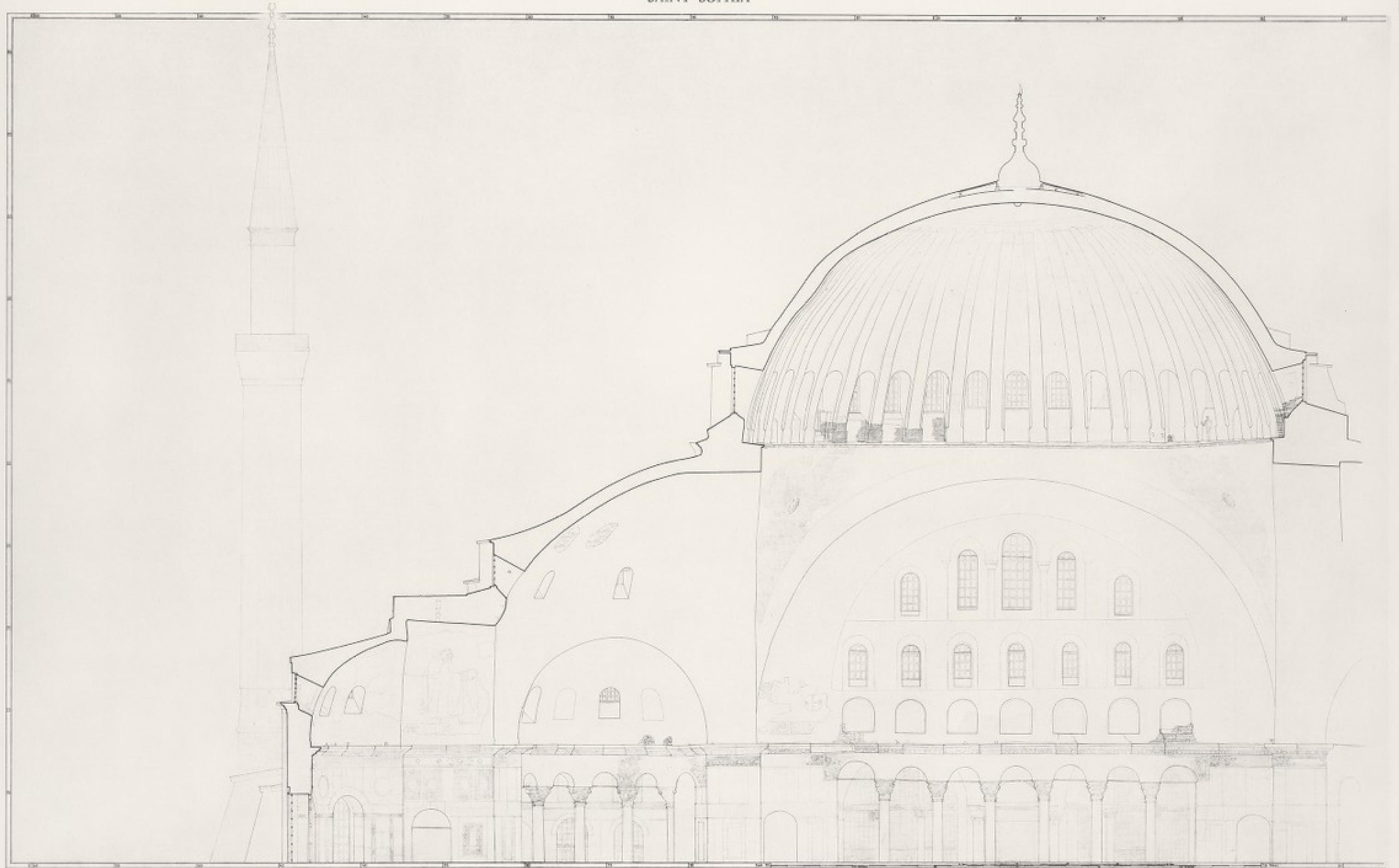


Plate 33. LONGITUDINAL SECTION, LOOKING SOUTH  
Higher Elements (Apse, East Semi-dome, and Main Dome)  
Scale = 1:100 m.



Plate 34A. WEST SEMIDOME, SOUTH ELEVATION  
Scale — 1:100 m.

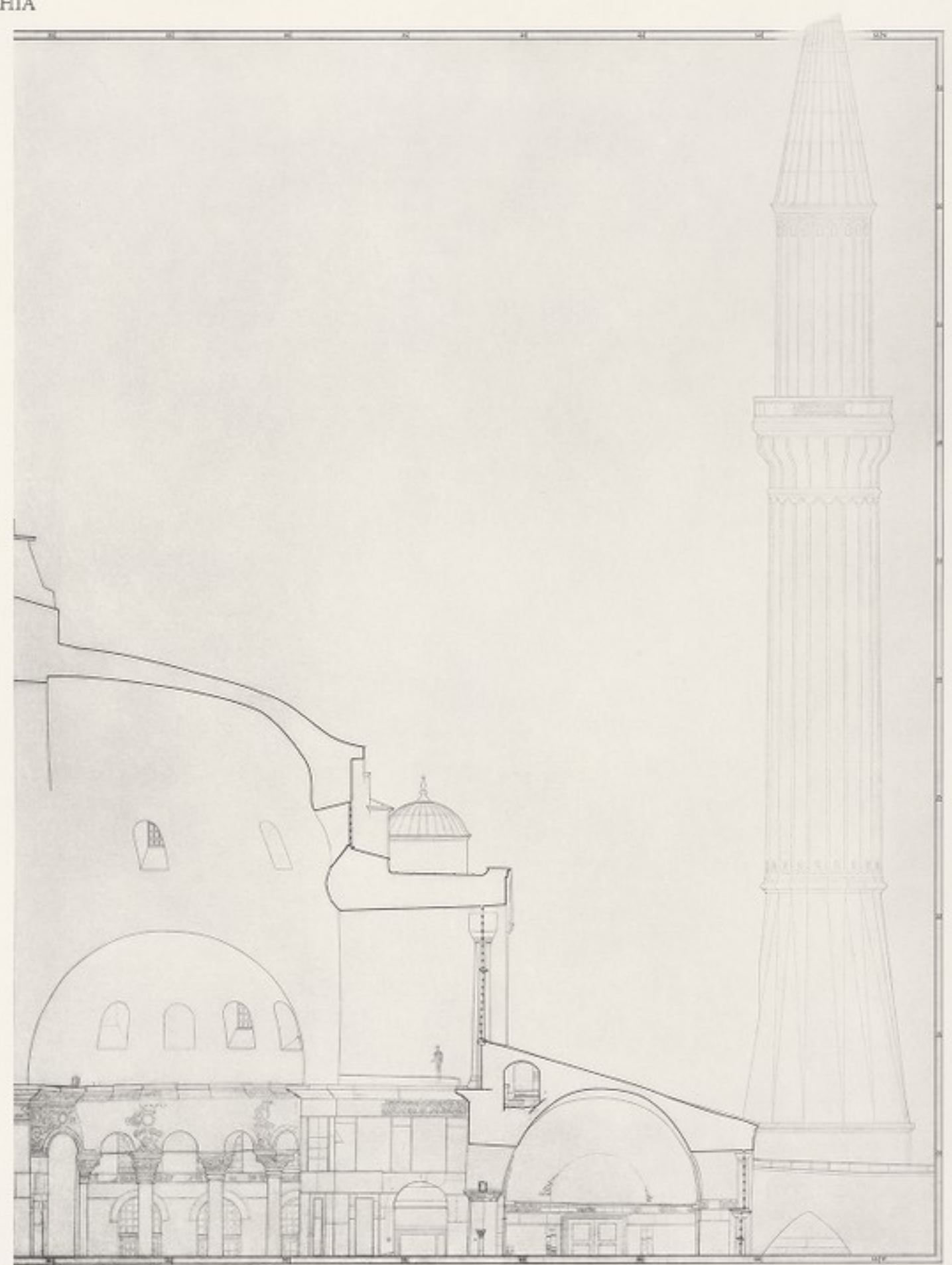


Plate 34B. LONGITUDINAL SECTION, LOOKING SOUTH  
West Semidome  
Scale — 1:100 m.



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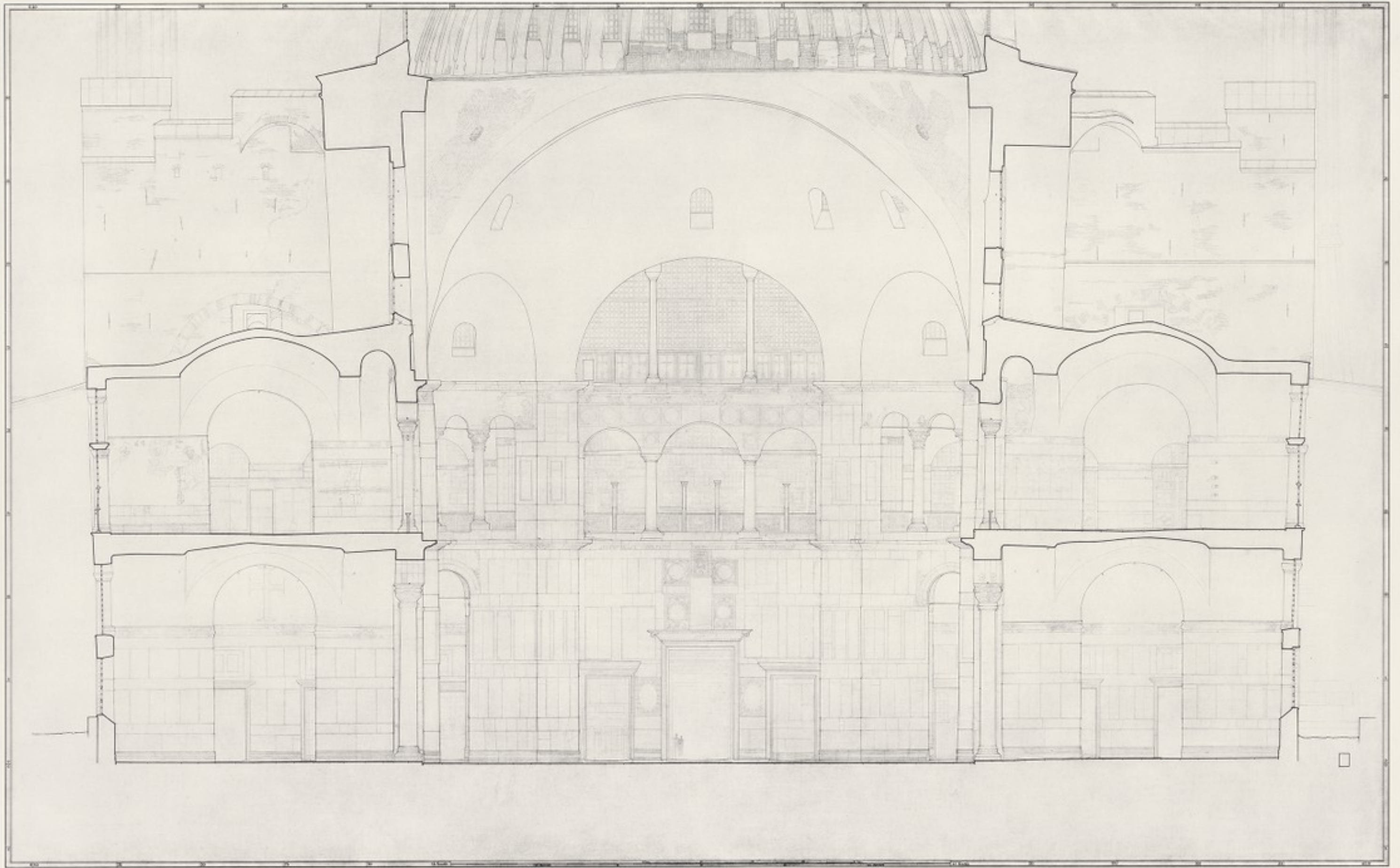


Plate 35. TRANSVERSE SECTION, LOOKING SOUTH  
Nave Floor to Dome Cornice  
Scale — 1:120 m



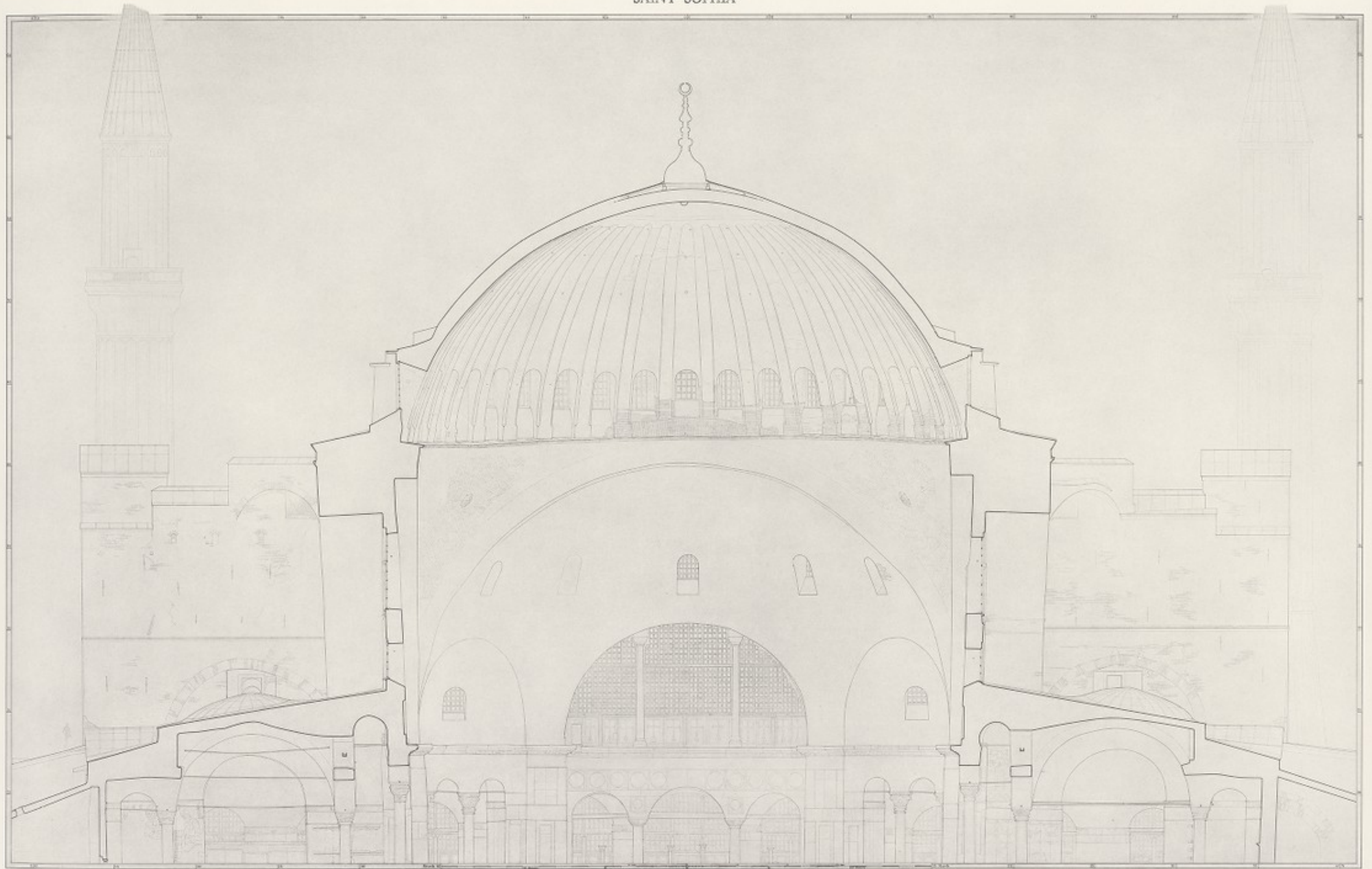


PLATE 36. TRANSVERSE SECTION, LOOKING WEST  
Higher Elements (Upper Parts of Gallery and Dome)  
Scale — 1:100 m.



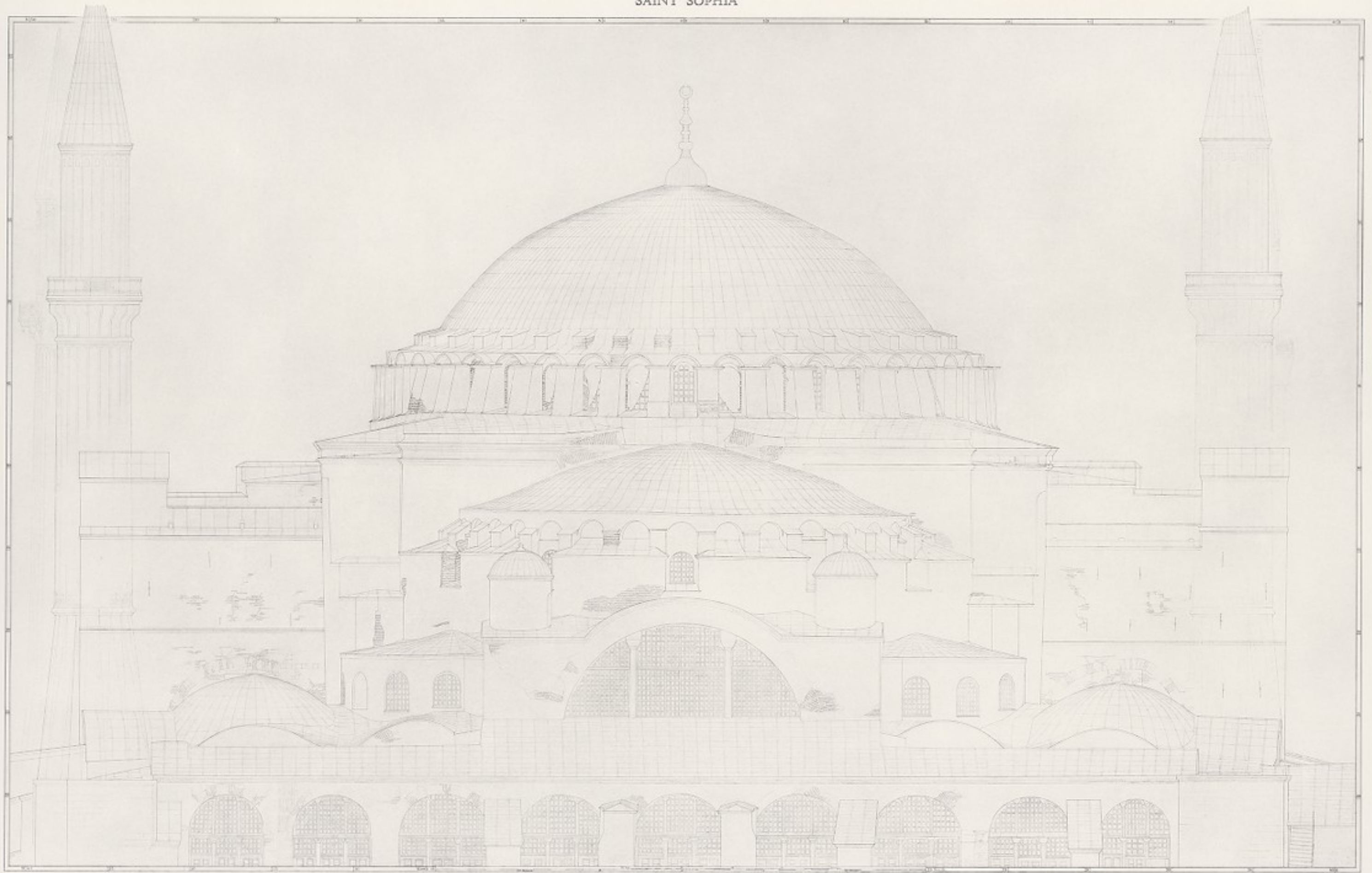


Plate 37. WEST ELEVATION  
Gallery Roof to Dome  
Scale = 1:100 m



PLATE 38. SOUTH ELEVATION  
Higher Elements (Apse Shell, East Semidome, and Dome)  
Scale = 1:100 m



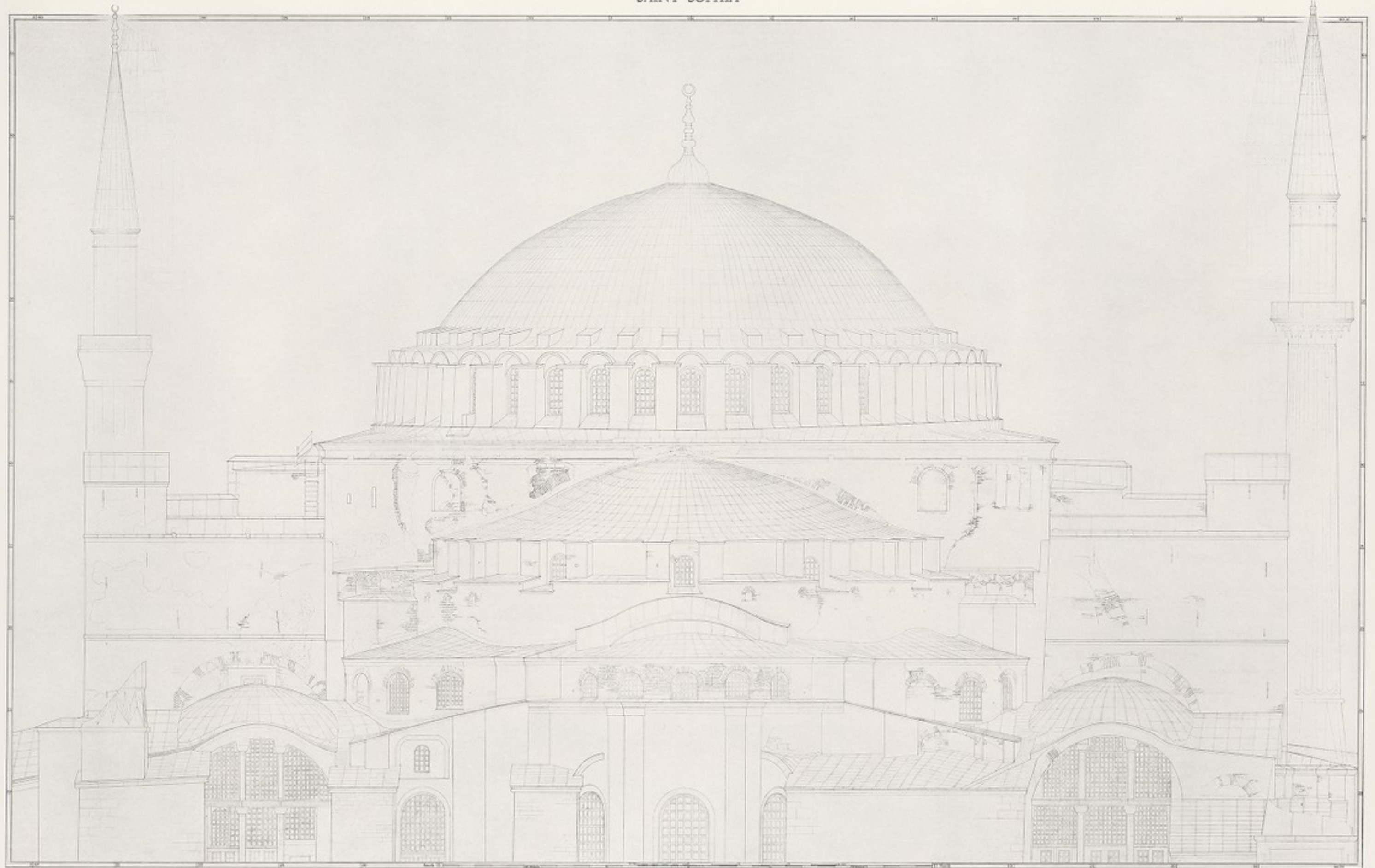


Plate 39. EAST ELEVATION  
Higher Elements (Gallery Roof to Dome)  
Scale = 1/100 m.



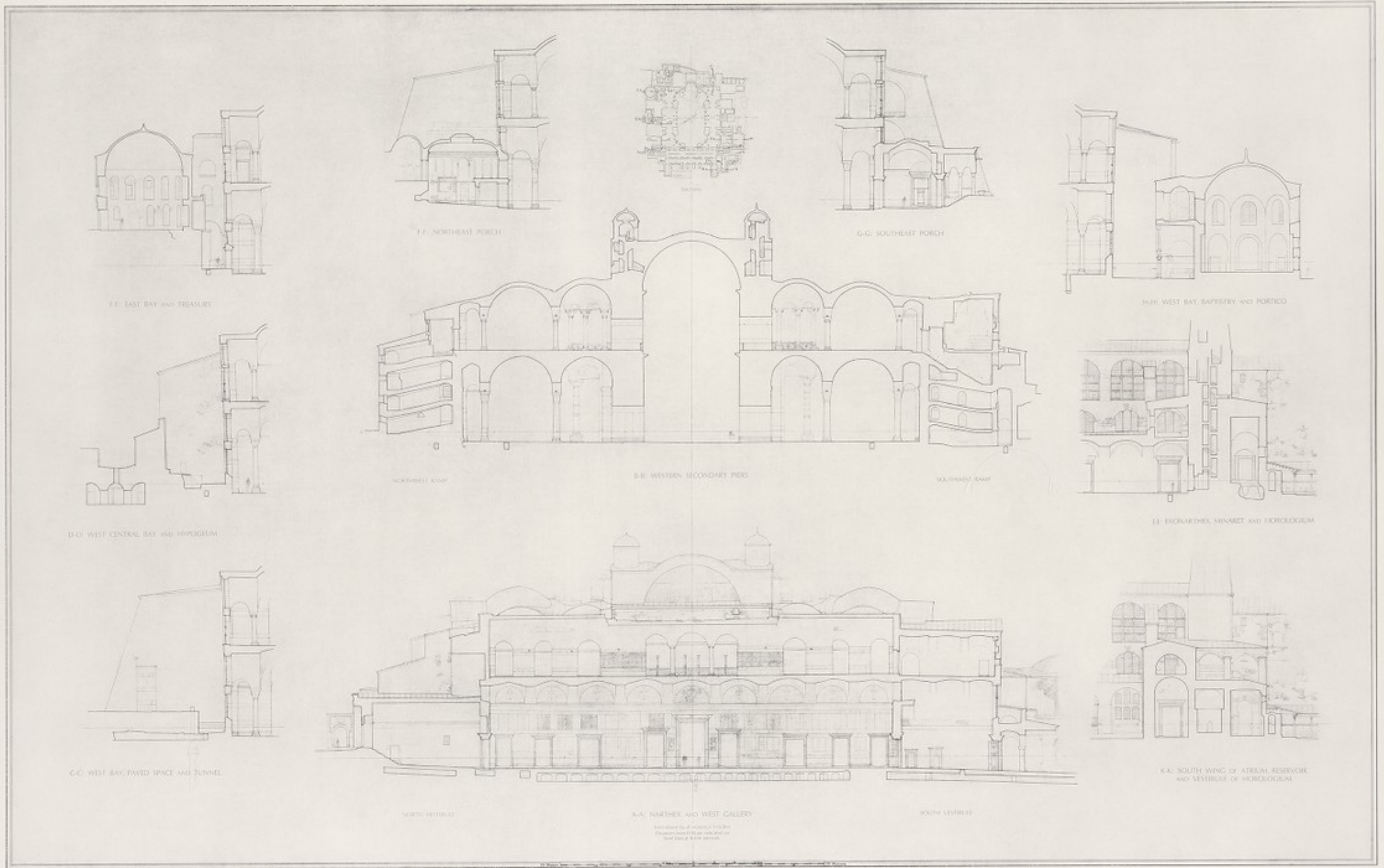


Plate 40. SECTIONS OF NARTHEX, VESTIBULES, AND PERIPHERAL CONSTRUCTIONS  
Scale — 1:250 m.



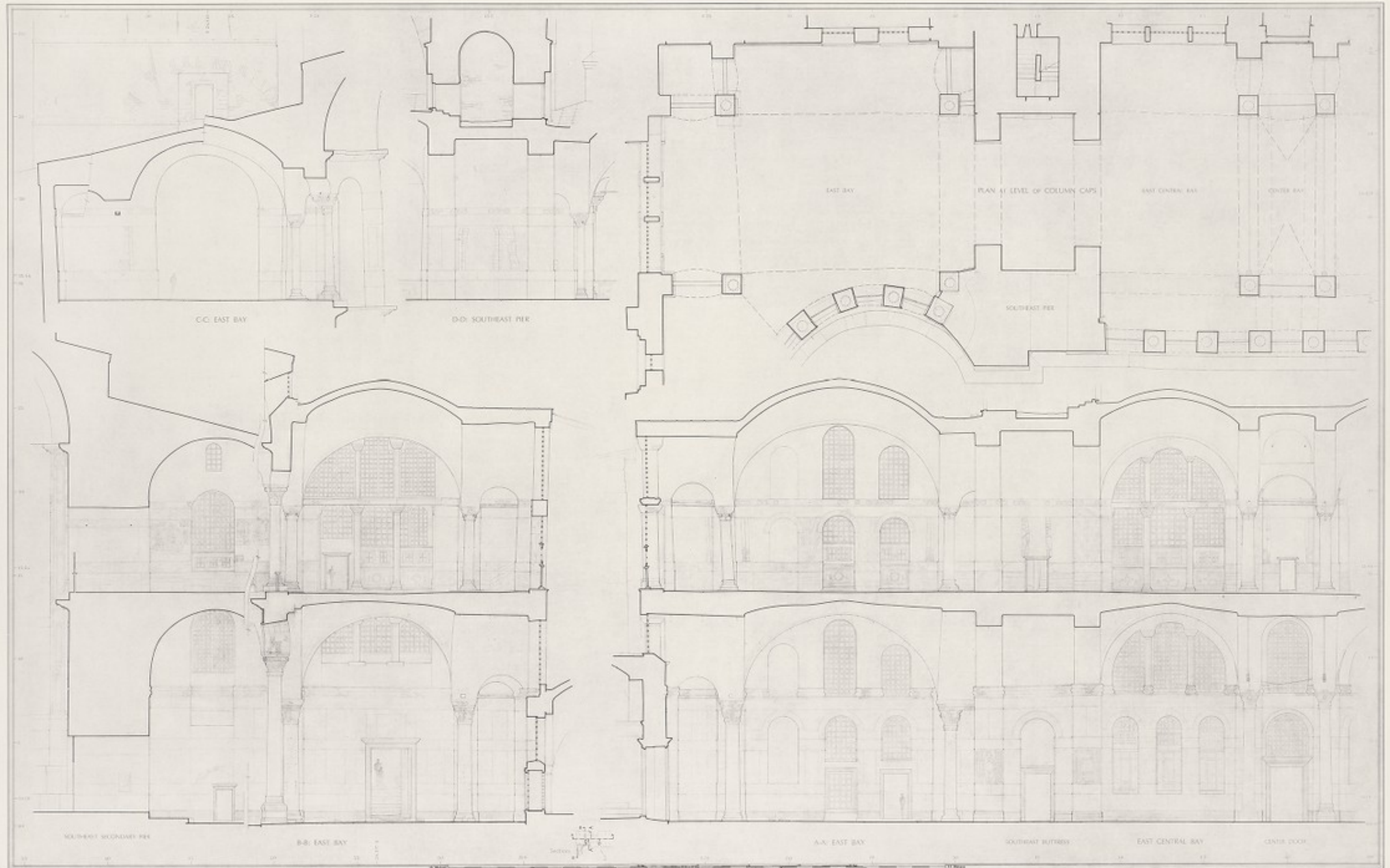


Plate 41. VAULT SECTIONS  
Eastern Half of South Aisle and Gallery  
Scale = 1:100





Harvard University - Dumbarton Oaks Research Library / Van Nice, Robert L. Saint Sophia in Istanbul : an architectural survey. [1965-1986]. DBL-FOLIO NA5870.A9 V36 1965. Dumbarton Oaks Research Library, Washington, D.C.







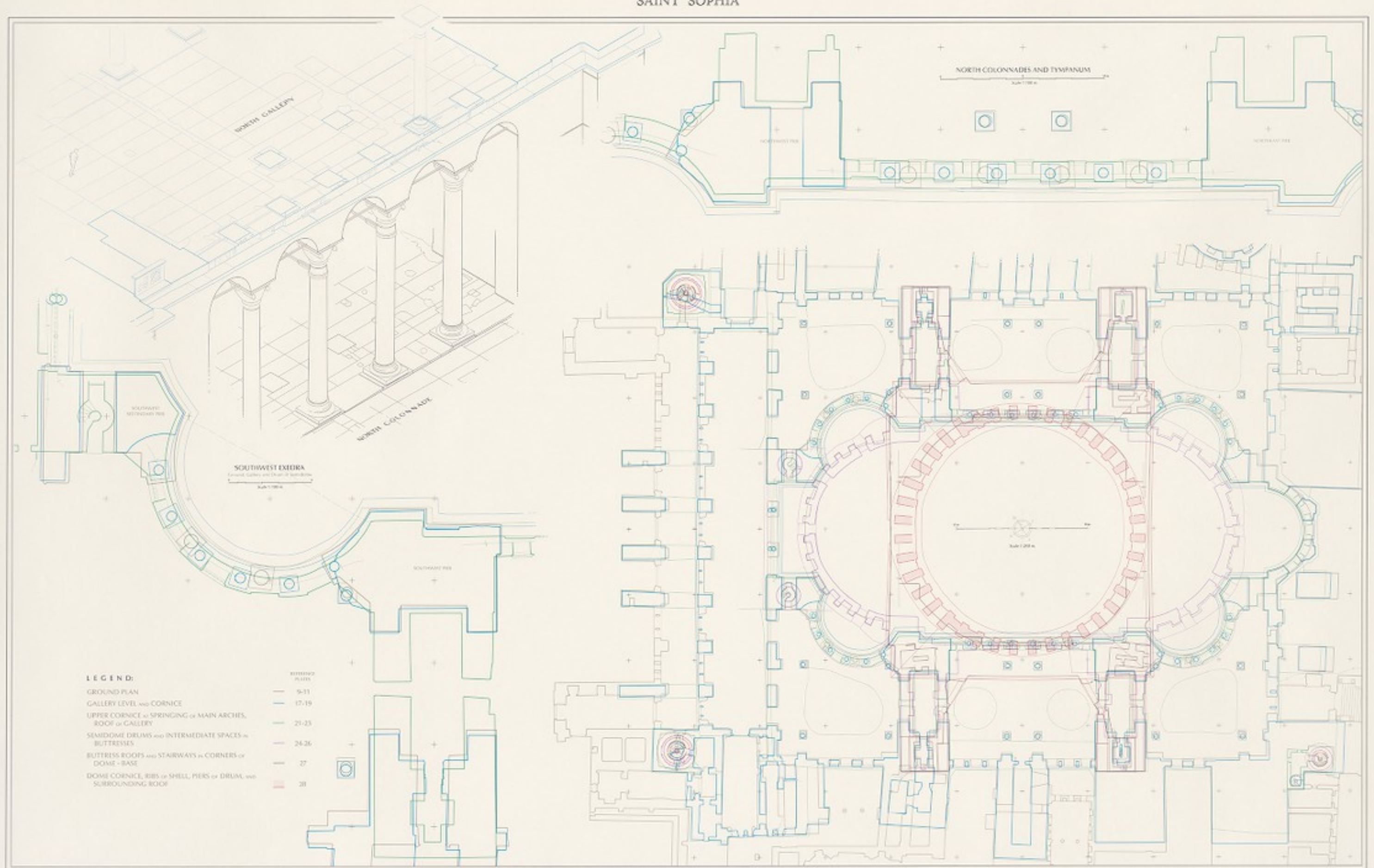


PLATE 44. TRACE PLANS SUPERIMPOSED  
Showing Relation of Elements at Successive Levels



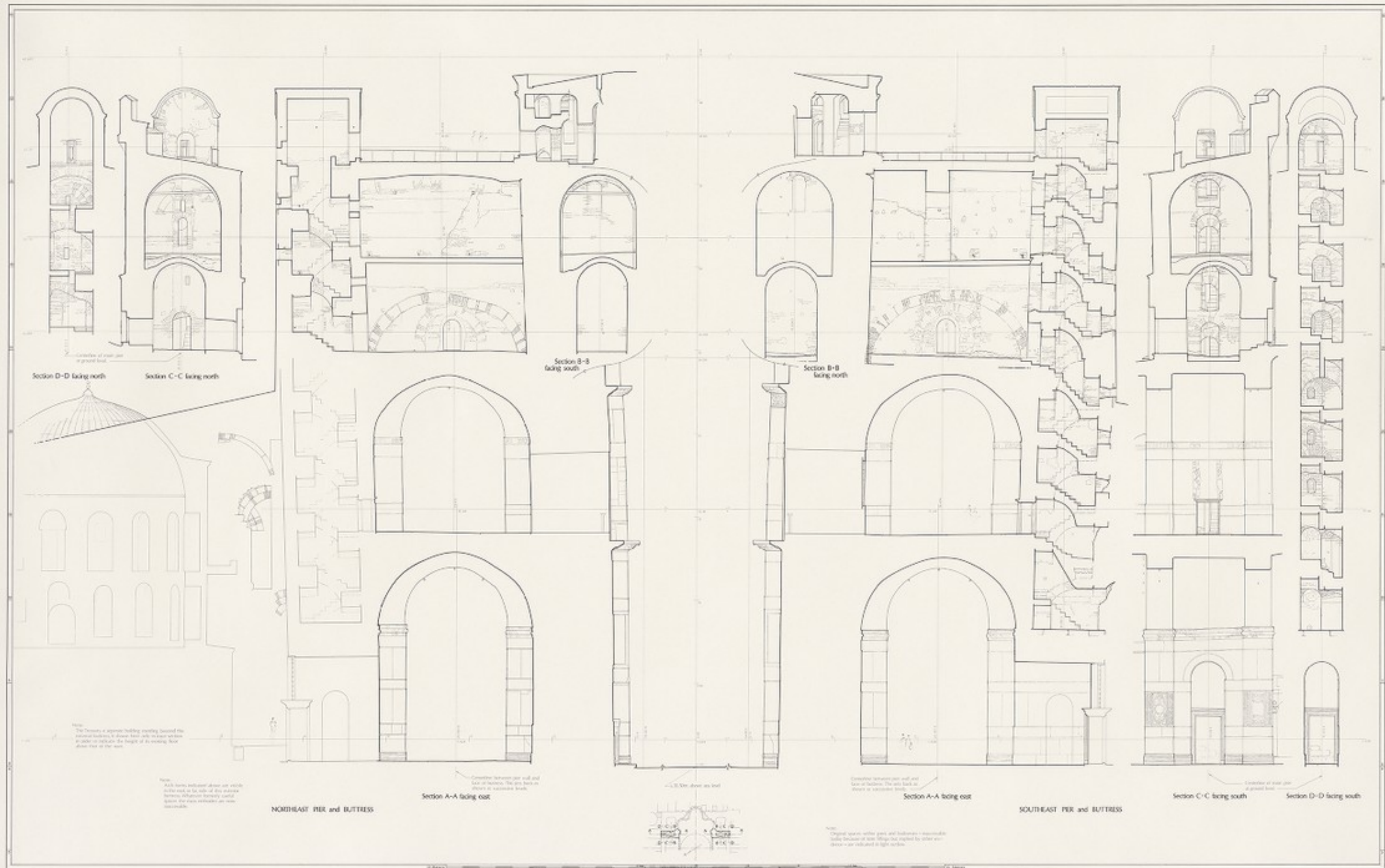


Plate 45. EASTERN PIERS and BUTTRESSES:  
Principal Sections  
Scale — 1:100 m.







